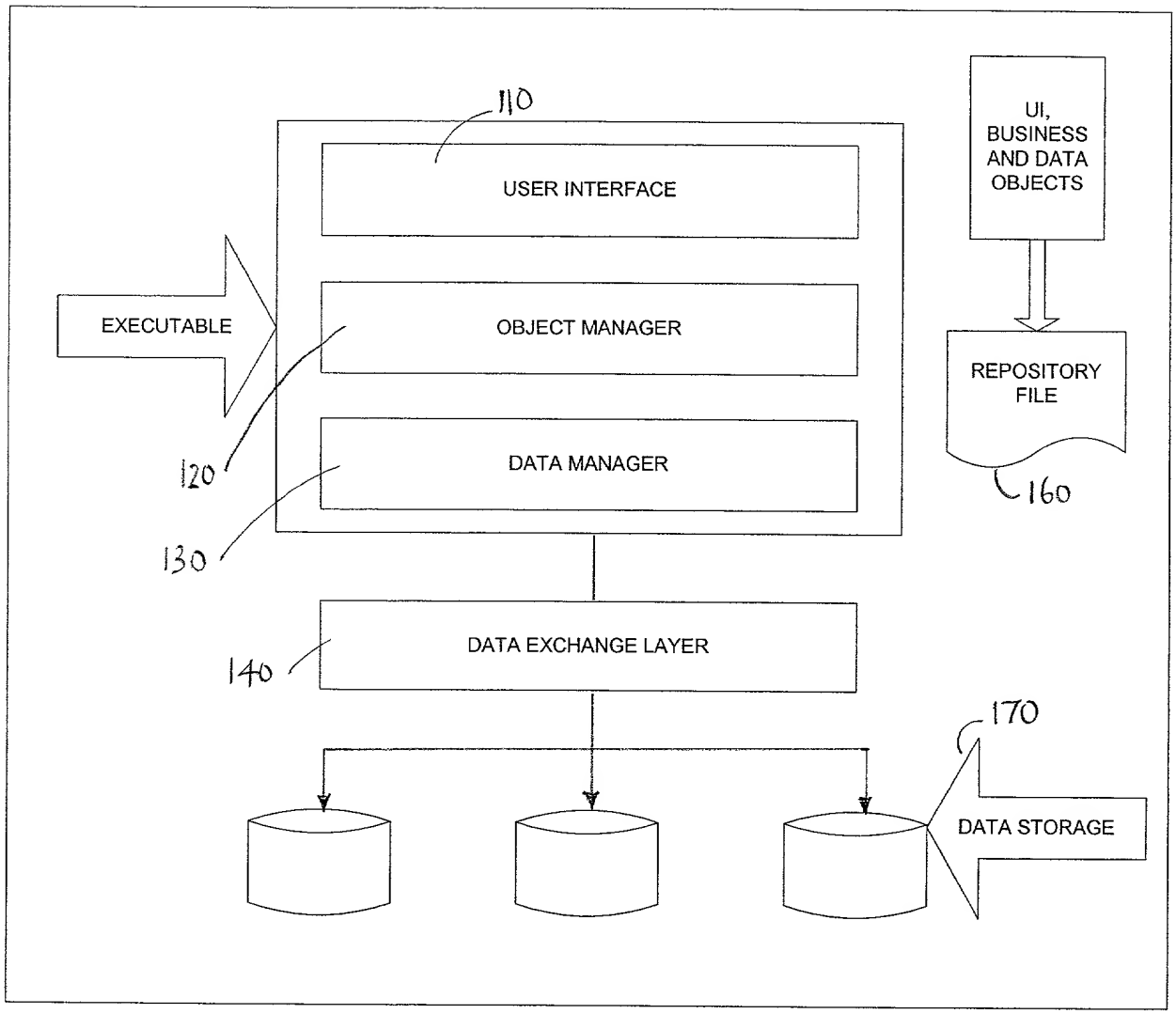

100
110
USER INTERFACE
UI, BUSINESS AND DATA OBJECTS
EXECUTABLE
OBJECT MANAGER
REPOSITORY FILE
120
DATA MANAGER
160
130
DATA EXCHANGE LAYER
140
170
DATA STORAGE

FIG. 1

Patent Application Publication

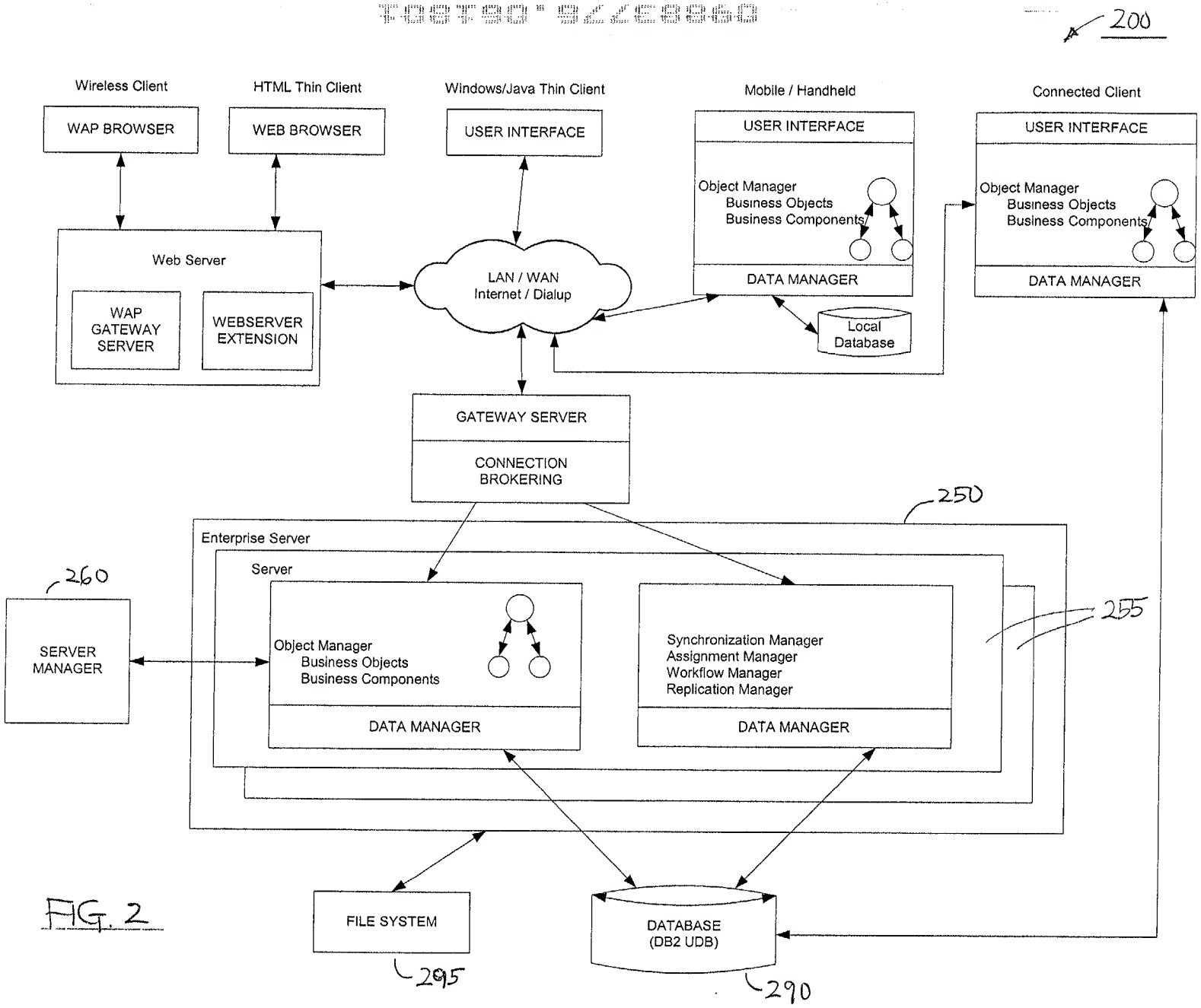


FIG. 2

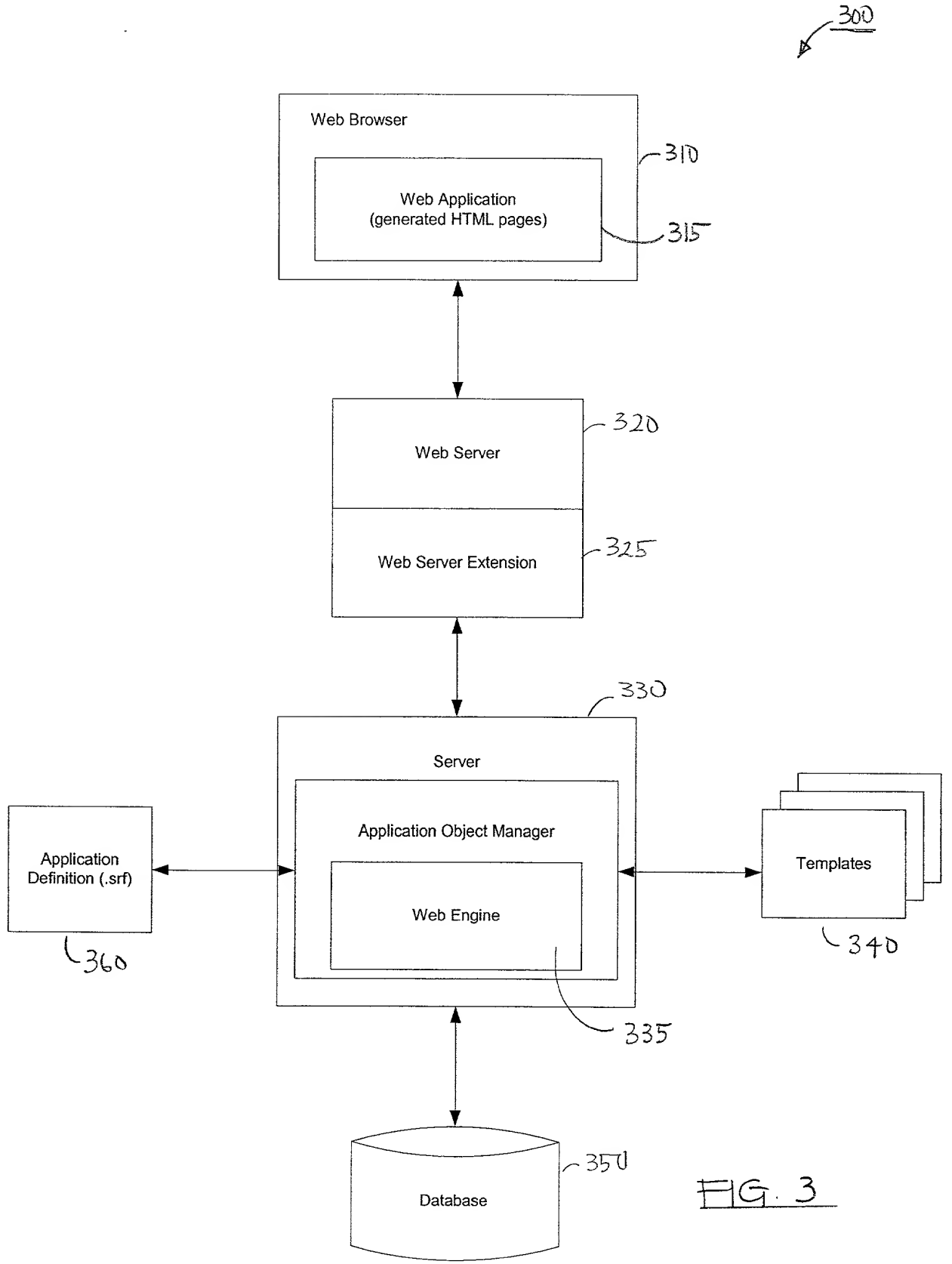

300
Web Browser
310
Web Application
(generated HTML pages)
315
Web Server
320
Web Server Extension
325
330
Server
Application Object Manager
Web Engine
335
Application
Definition (.srf)
360
Templates
340
Database
350

FIG. 3

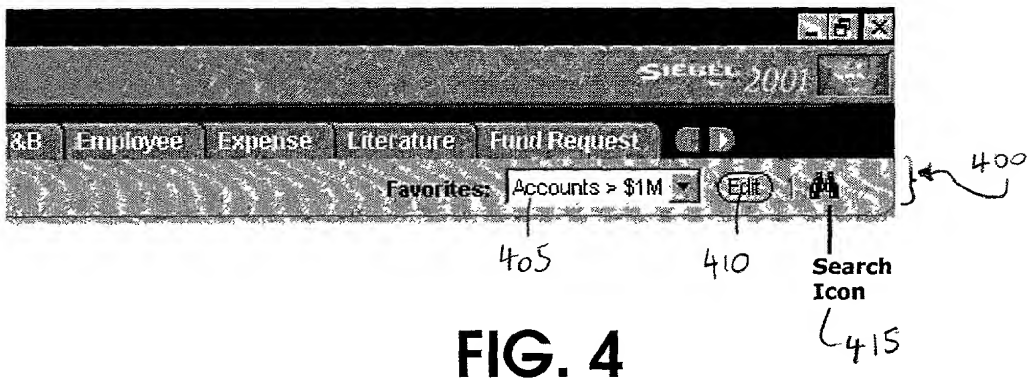

SIEGEL 2001
&B
Employee
Expense
Literature
Fund Request
Favorites:
Accounts > $1M
Edit
400
405
410
Search Icon
415

FIG. 4

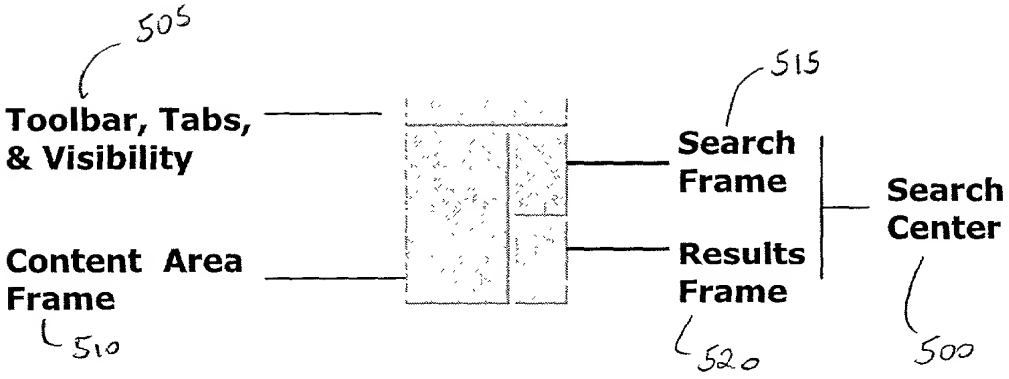

505
Toolbar, Tabs, & Visibility
Content Area Frame
510
515
Search Frame
Results Frame
520
Search Center
500

FIG. 5

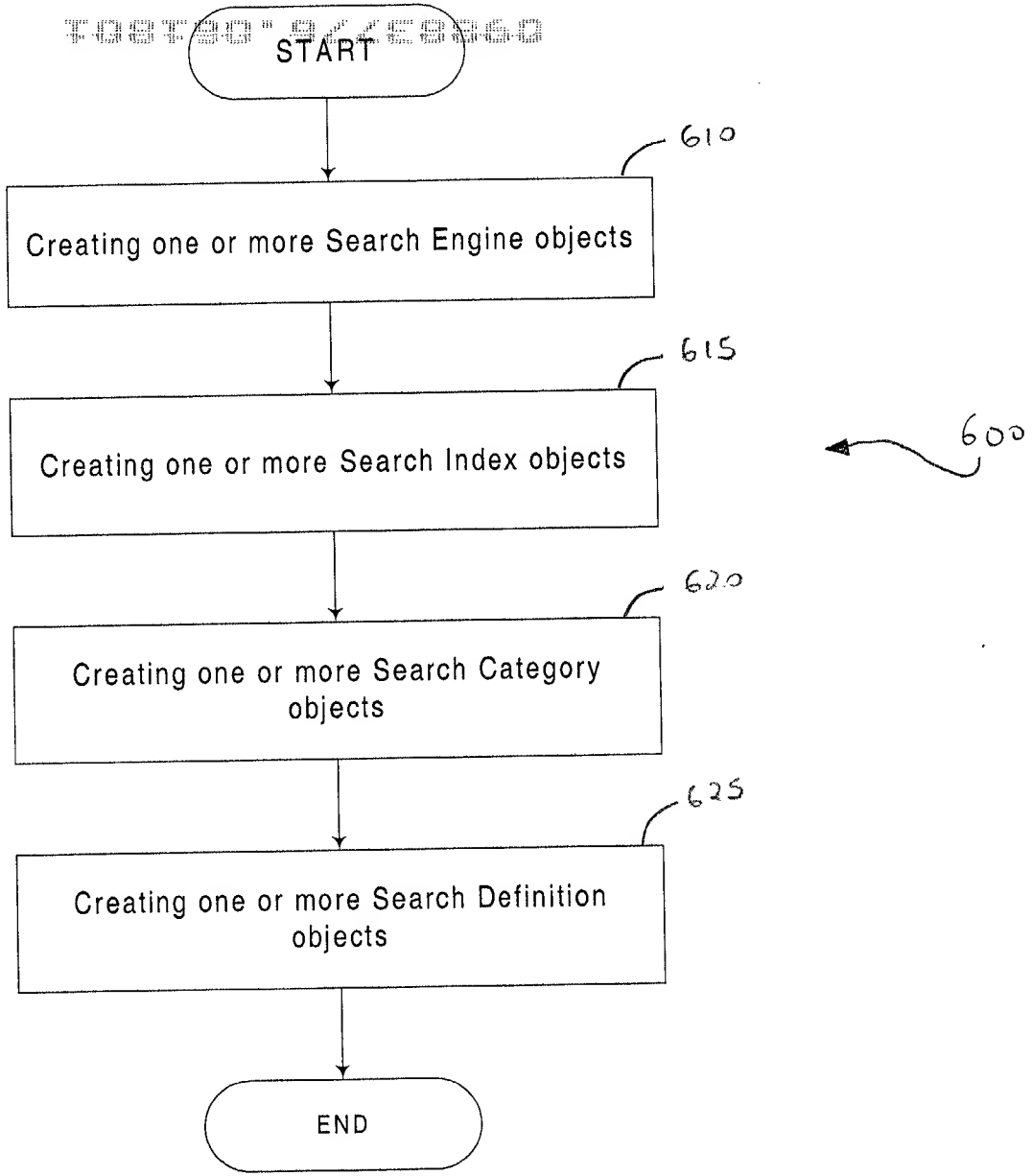

START
610
Creating one or more Search Engine objects
615
Creating one or more Search Index objects
600
620
Creating one or more Search Category objects
625
Creating one or more Search Definition objects
END

FIG. 6

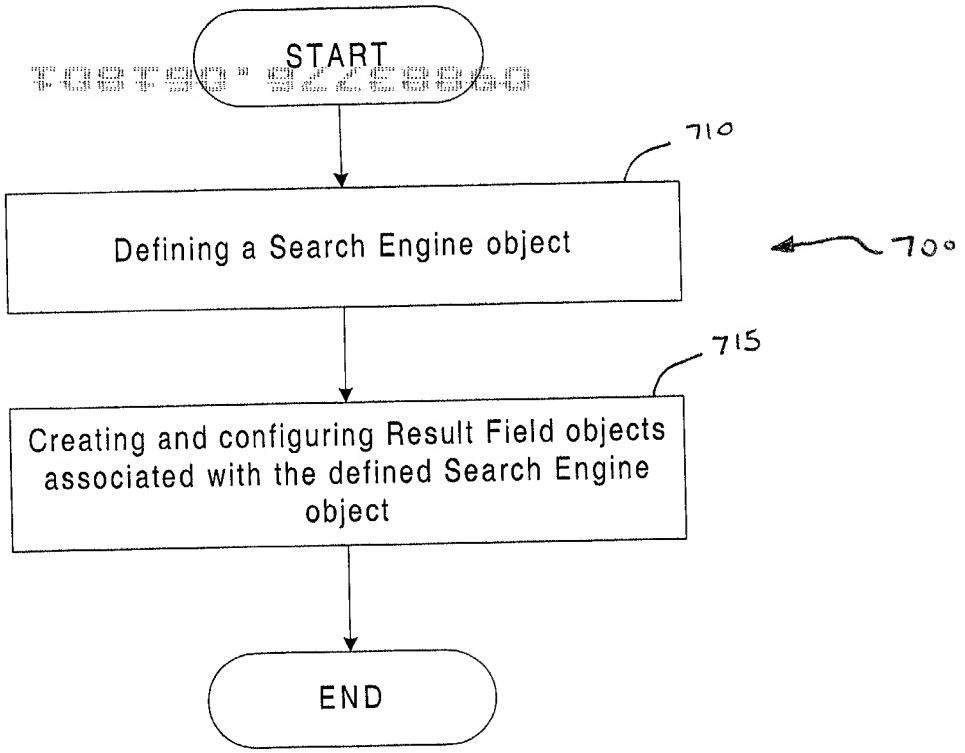

START
710
Defining a Search Engine object
700
715
Creating and configuring Result Field objects associated with the defined Search Engine object
END

FIG. 7

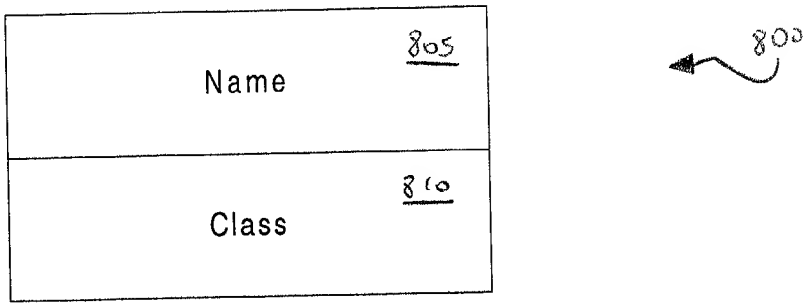

805
Name
810
Class
800

FIG. 8

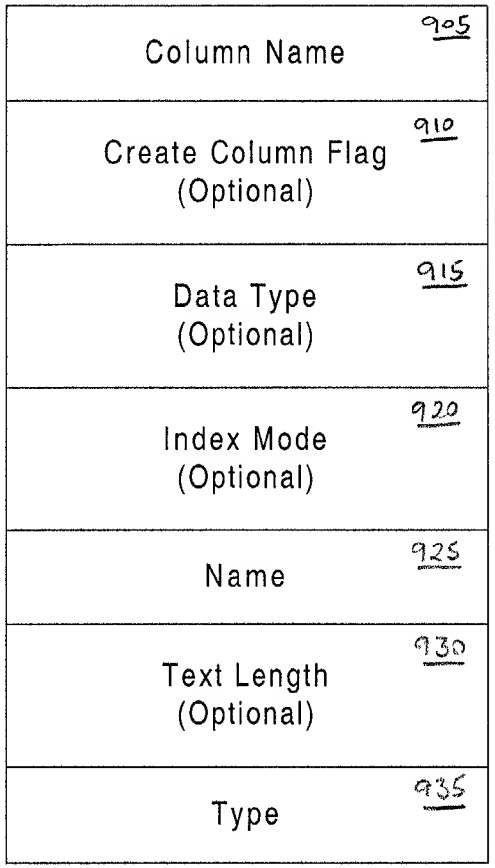

Column Name
905
Create Column Flag
(Optional)
910
Data Type
(Optional)
915
Index Mode
(Optional)
920
Name
925
Text Length
(Optional)
930
Type
935
900

FIG. 9

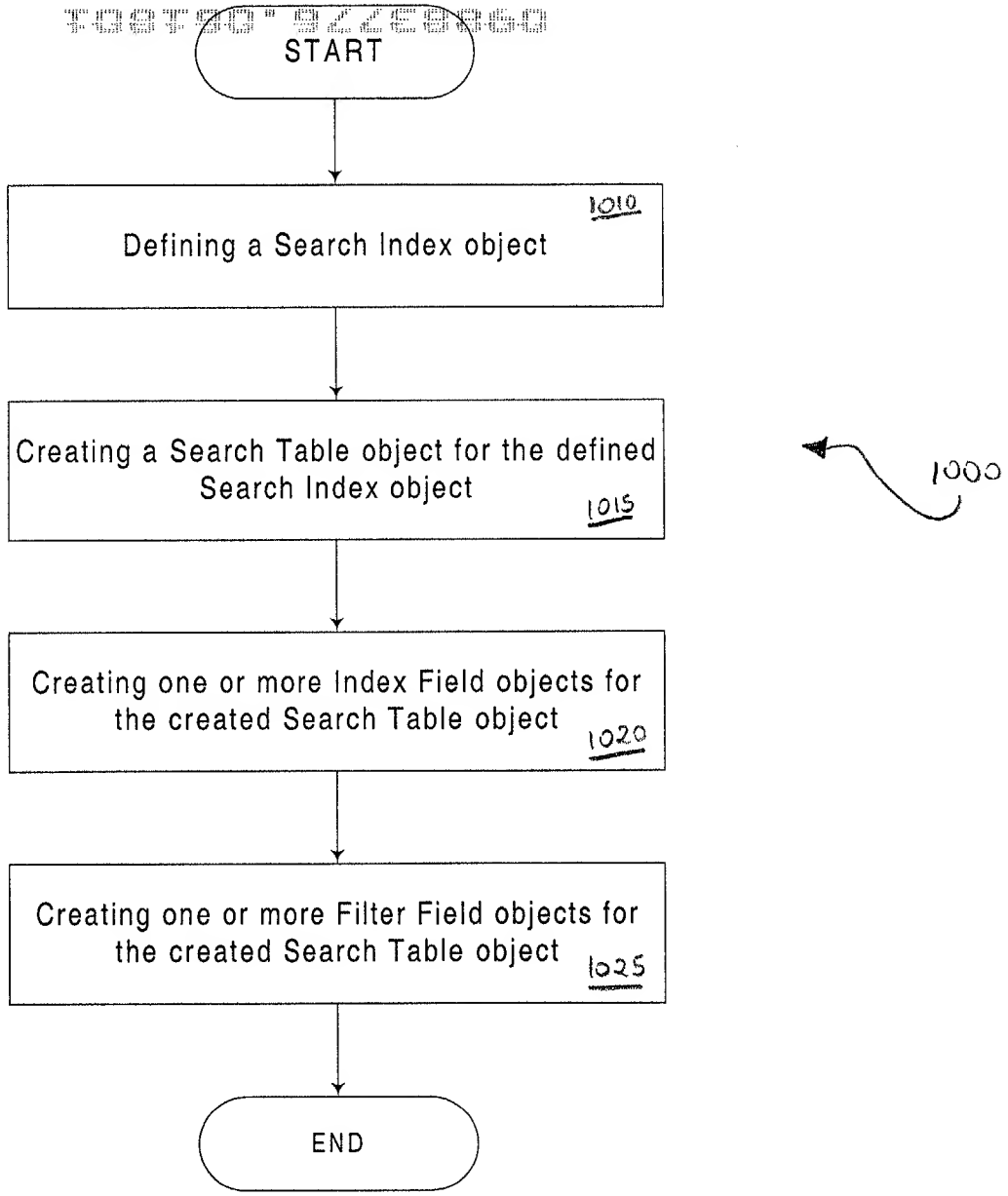

START
Defining a Search Index object
1010
Creating a Search Table object for the defined Search Index object
1015
1000
Creating one or more Index Field objects for the created Search Table object
1020
Creating one or more Filter Field objects for the created Search Table object
1025
END

FIG. 10

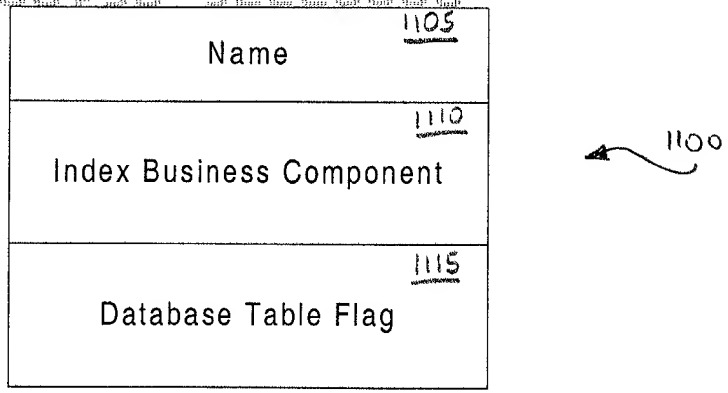

1105
Name
1110
Index Business Component
1115
Database Table Flag
1100

FIG. 11

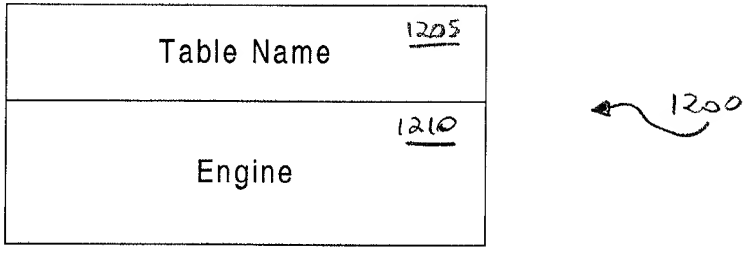

1205
Table Name
1210
Engine
1200

FIG. 12

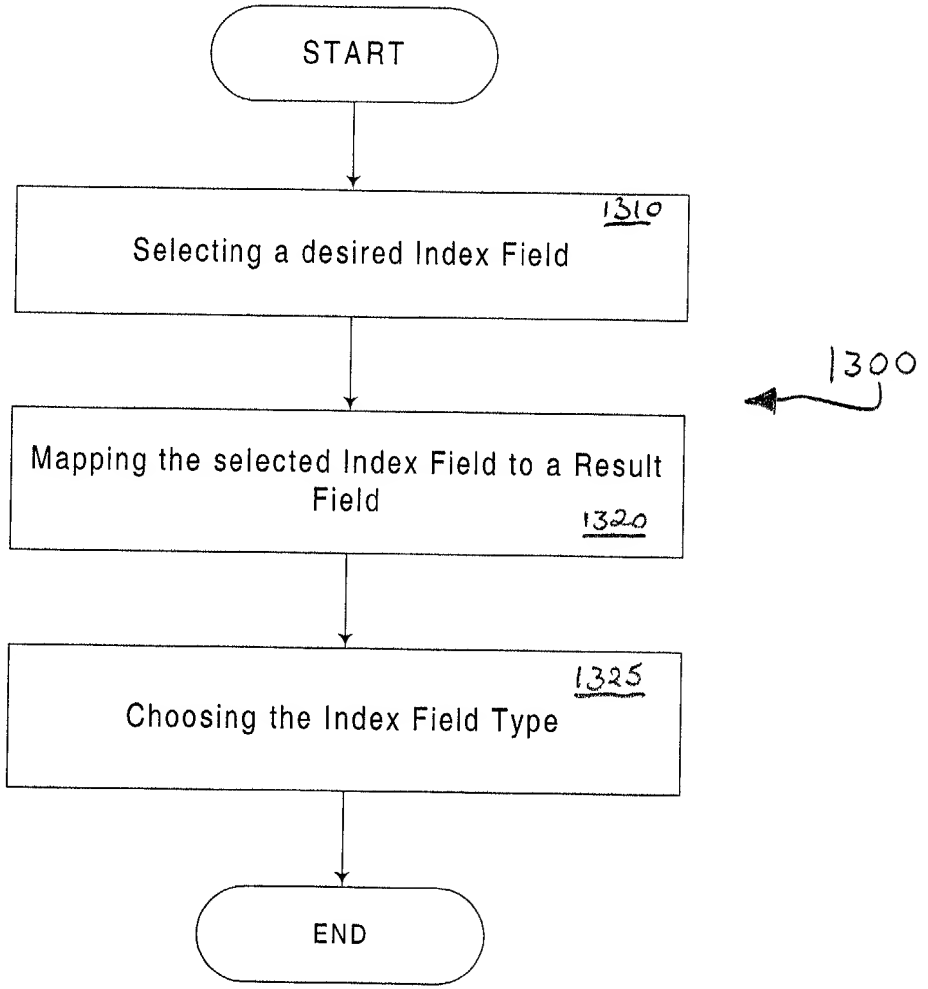

START
1310
Selecting a desired Index Field
1300
Mapping the selected Index Field to a Result Field
1320
1325
Choosing the Index Field Type
END

FIG. 13

T08T90" 9Z6E886D

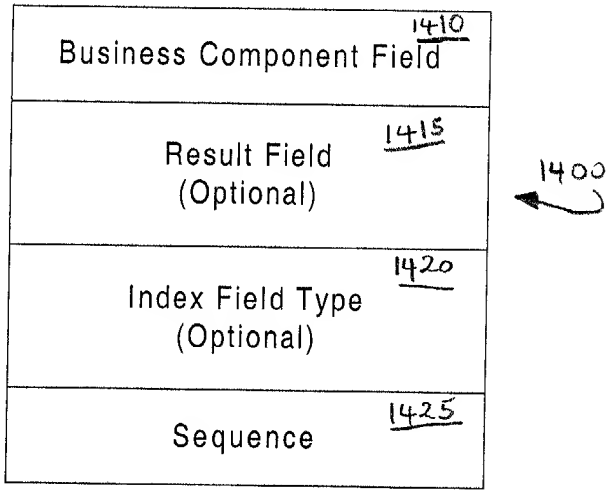


FIG. 14A

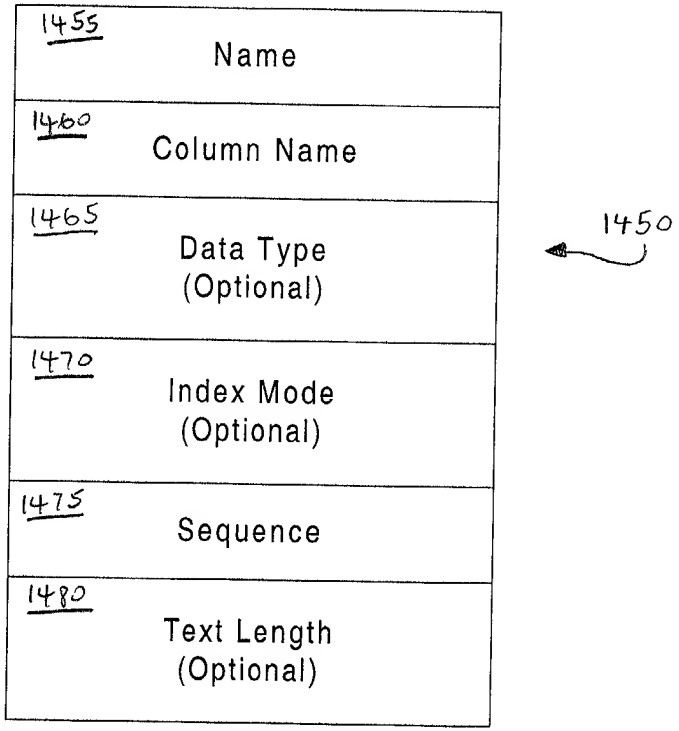


FIG. 14B

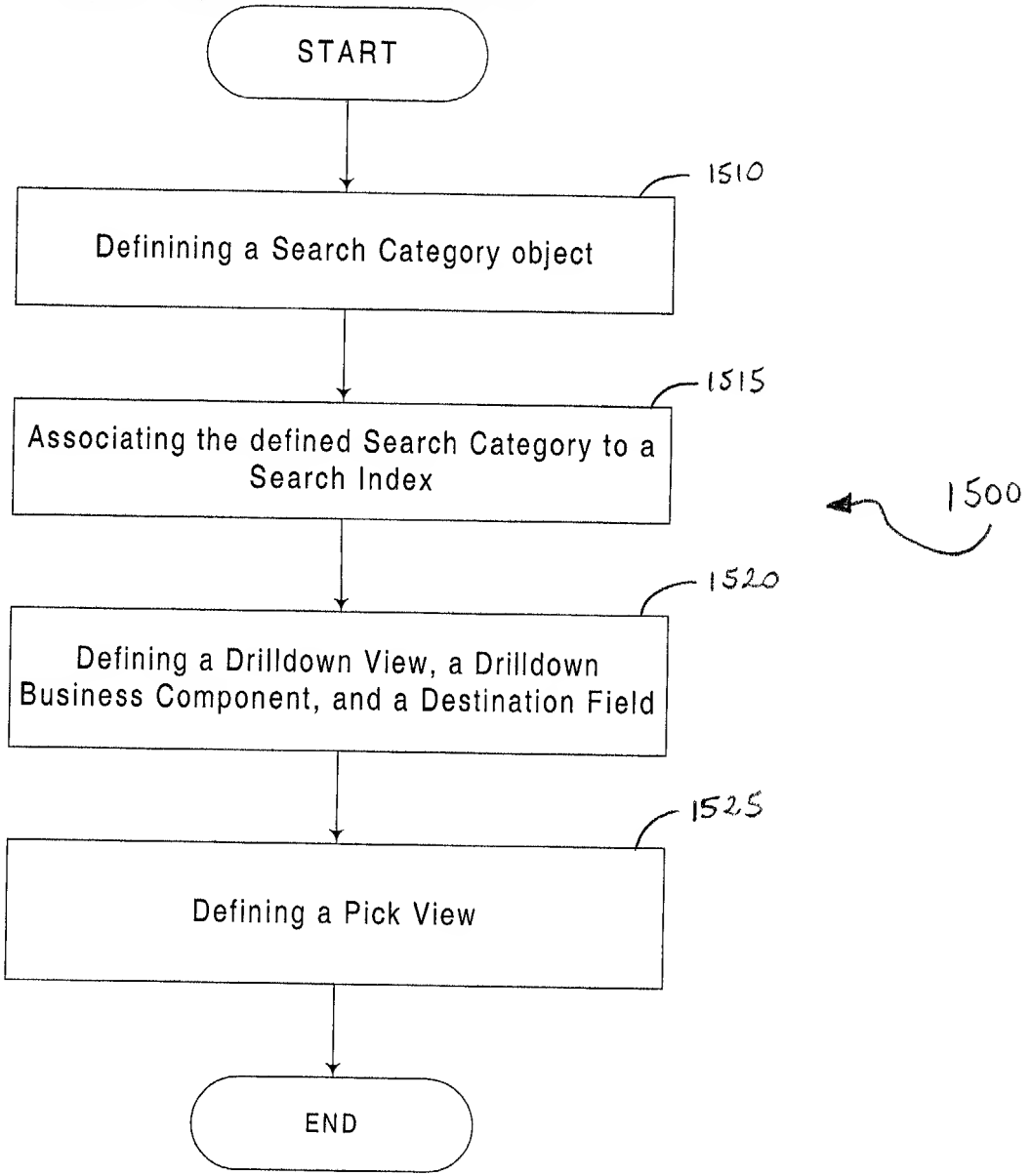

START
1510
Definining a Search Category object
1515
Associating the defined Search Category to a Search Index
1500
1520
Defining a Drilldown View, a Drilldown Business Component, and a Destination Field
1525
Defining a Pick View
END

FIG. 15

T0837S0 92283960

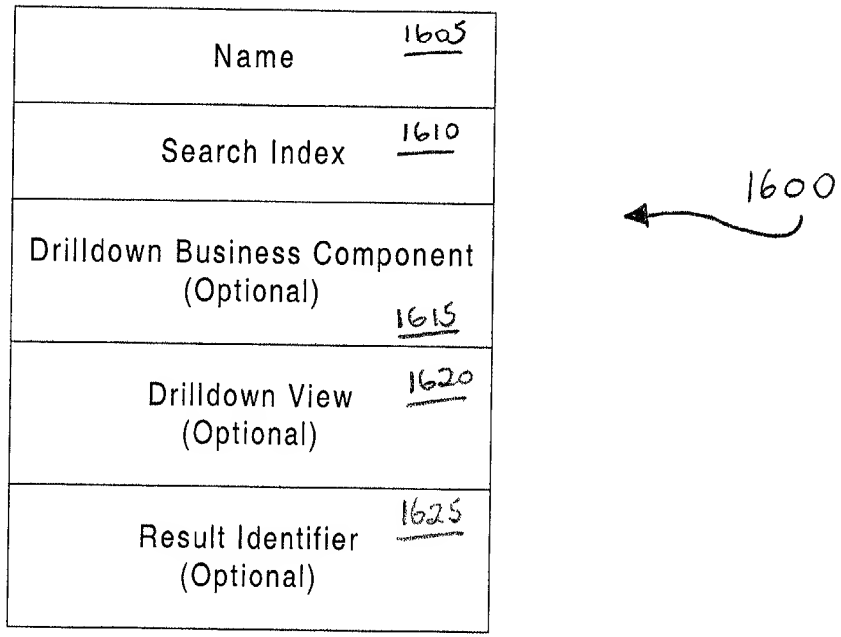


FIG. 16

EP 0 817 90" 9/26 0860

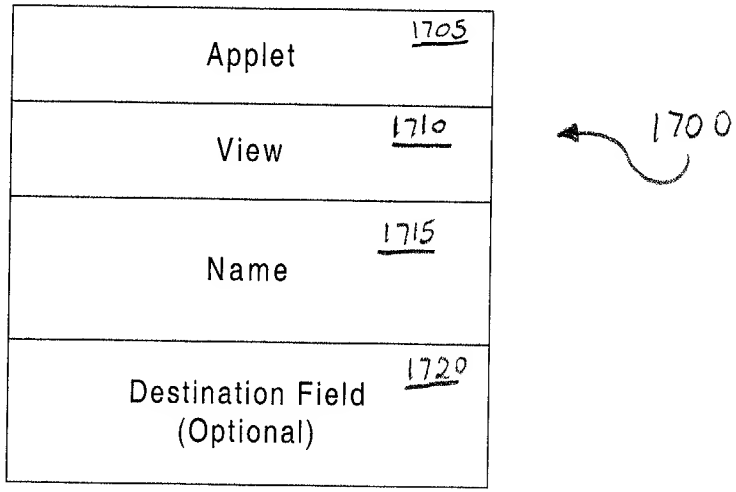


FIG. 17

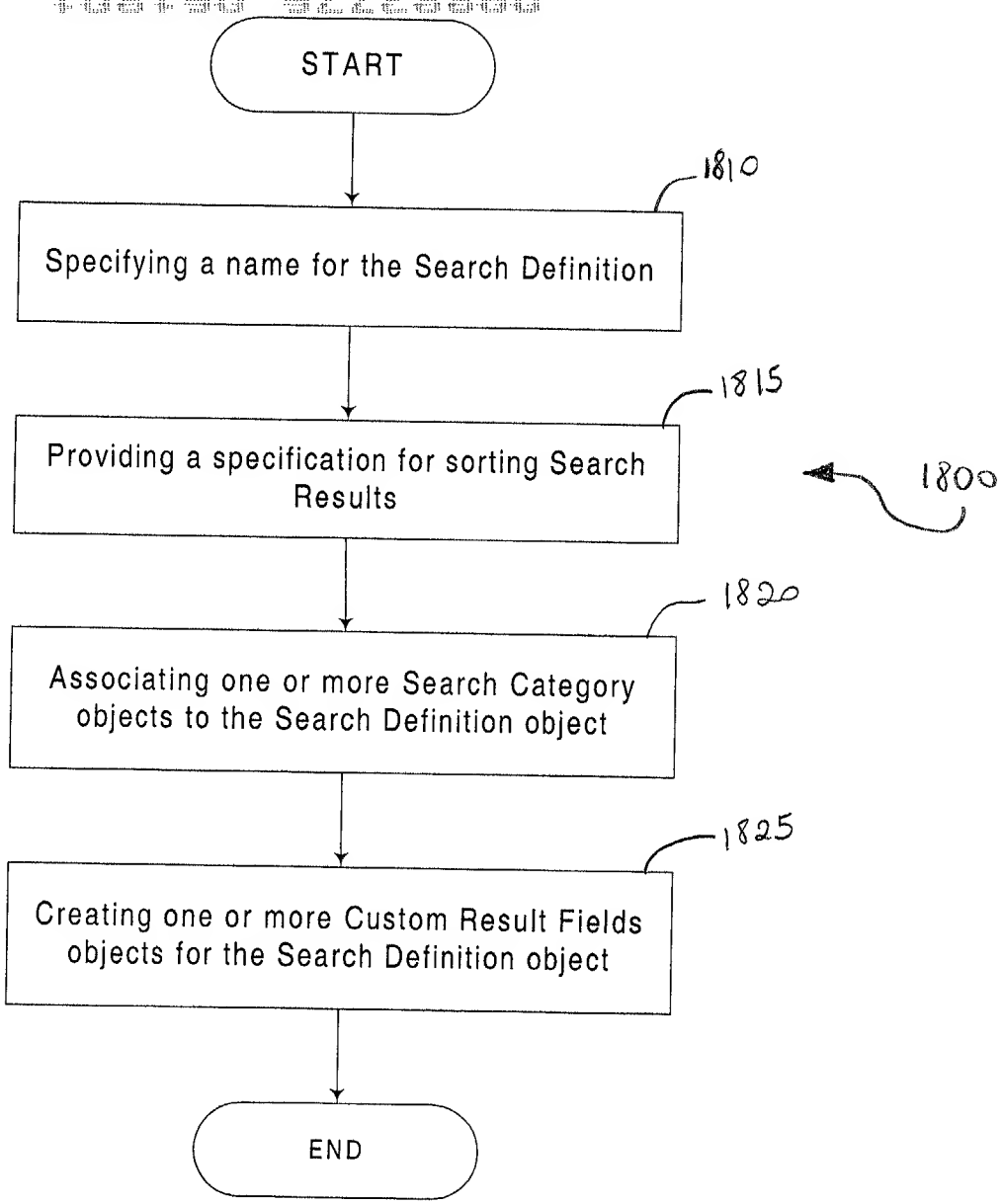

START
1810
Specifying a name for the Search Definition
1815
Providing a specification for sorting Search Results
1800
1820
Associating one or more Search Category objects to the Search Definition object
1825
Creating one or more Custom Result Fields objects for the Search Definition object
END

FIG. 18

T08T90 "9Z/E8860

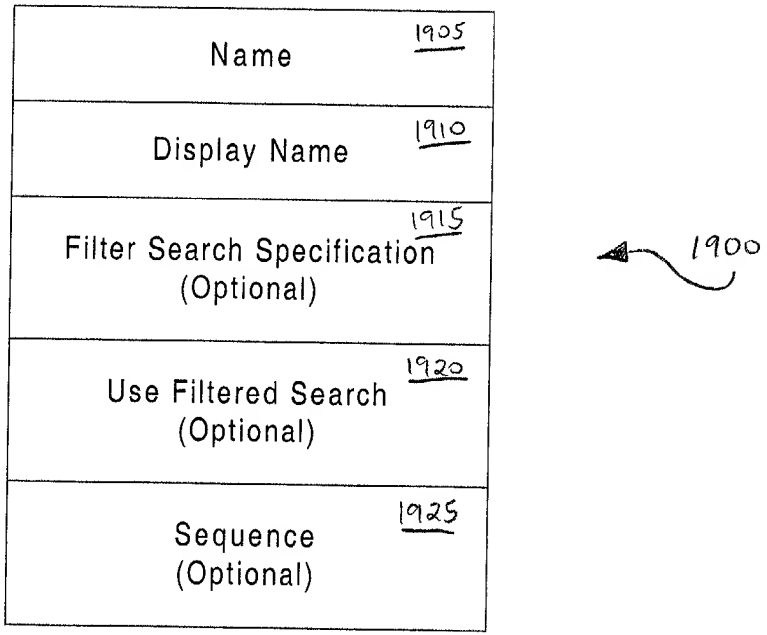


FIG. 19

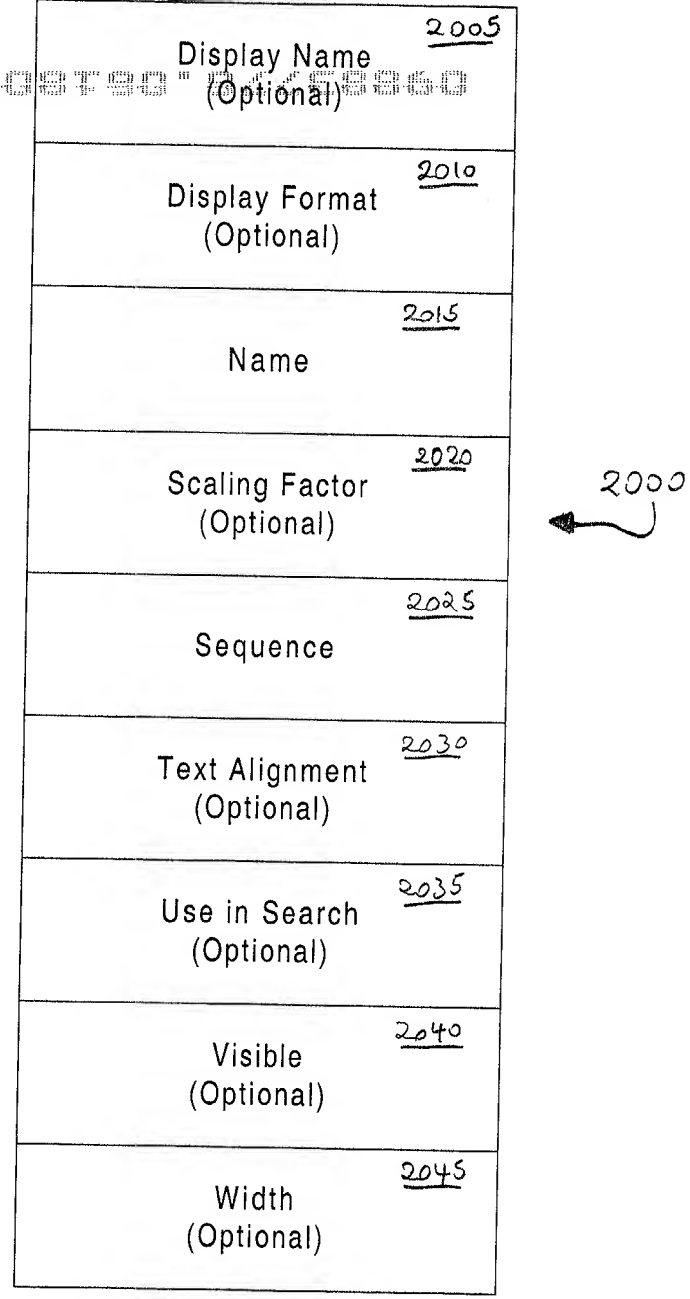

2005
Display Name
(Optional)
2010
Display Format
(Optional)
2015
Name
2020
Scaling Factor
(Optional)
2000
2025
Sequence
2030
Text Alignment
(Optional)
2035
Use in Search
(Optional)
2040
Visible
(Optional)
2045
Width
(Optional)

FIG. 20

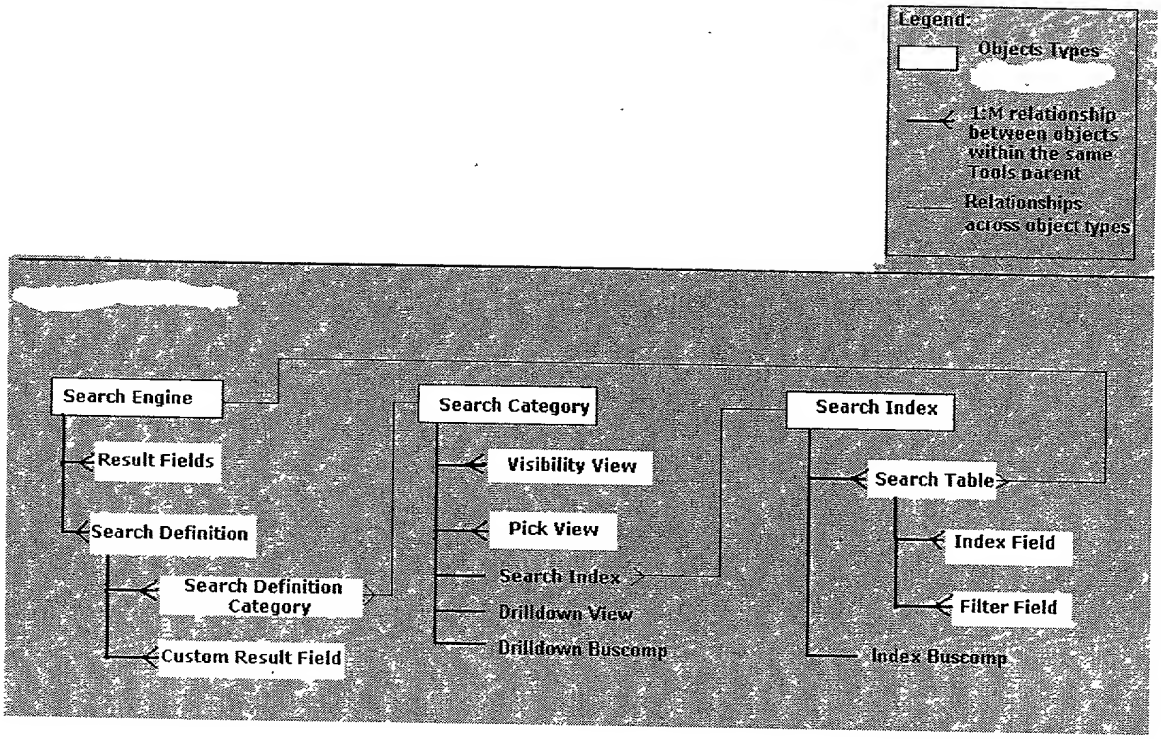

Legend:
Objects Types
1:M relationship between objects within the same Tools parent
Relationships across object types
Search Engine
Result Fields
Search Definition
Search Definition Category
Custom Result Field
Search Category
Visibility View
Pick View
Search Index
Drilldown View
Drilldown Buscomp
Search Index
Search Table
Index Field
Filter Field
Index Buscomp

FIG. 21

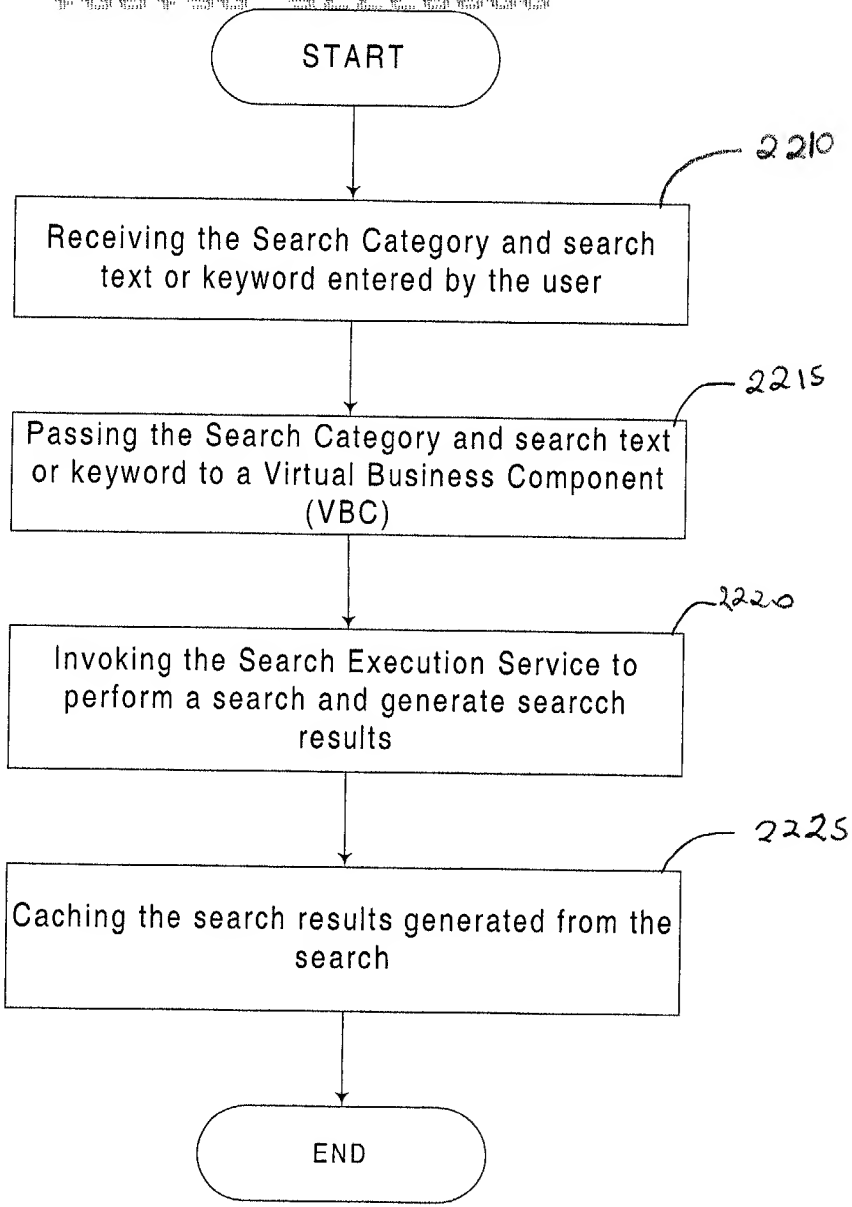

START
2210
Receiving the Search Category and search text or keyword entered by the user
2215
Passing the Search Category and search text or keyword to a Virtual Business Component (VBC)
2220
Invoking the Search Execution Service to perform a search and generate searcch results
2225
Caching the search results generated from the search
END

FIG. 22

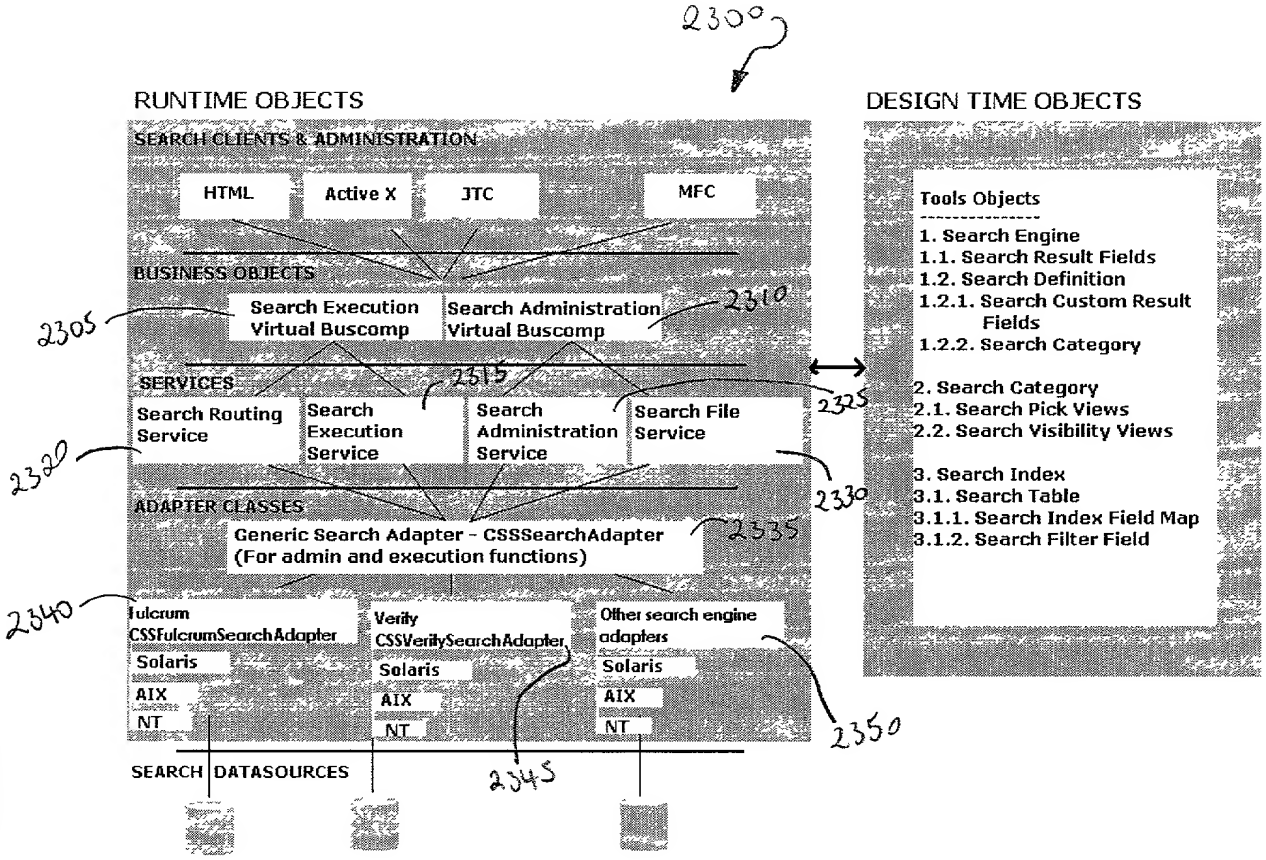

2300
RUNTIME OBJECTS
DESIGN TIME OBJECTS
SEARCH CLIENTS & ADMINISTRATION
HTML
Active X
JTC
MFC
BUSINESS OBJECTS
Search Execution Virtual Buscomp
Search Administration Virtual Buscomp
2305
2310
SERVICES
2315
2325
Search Routing Service
Search Execution Service
Search Administration Service
Search File Service
2320
2330
ADAPTER CLASSES
Generic Search Adapter - CSSSearchAdapter (For admin and execution functions)
2335
2340
fulcrum CSSFulcrumSearchAdapter
Verity CSSVeritySearchAdapter
Other search engine adapters
Solaris
AIX
NT
Solaris
AIX
NT
Solaris
AIX
NT
2350
SEARCH DATASOURCES
2345
Tools Objects
1. Search Engine
1.1. Search Result Fields
1.2. Search Definition
1.2.1. Search Custom Result Fields
1.2.2. Search Category
2. Search Category
2.1. Search Pick Views
2.2. Search Visibility Views
3. Search Index
3.1. Search Table
3.1.1. Search Index Field Map
3.1.2. Search Filter Field

FIG. 23

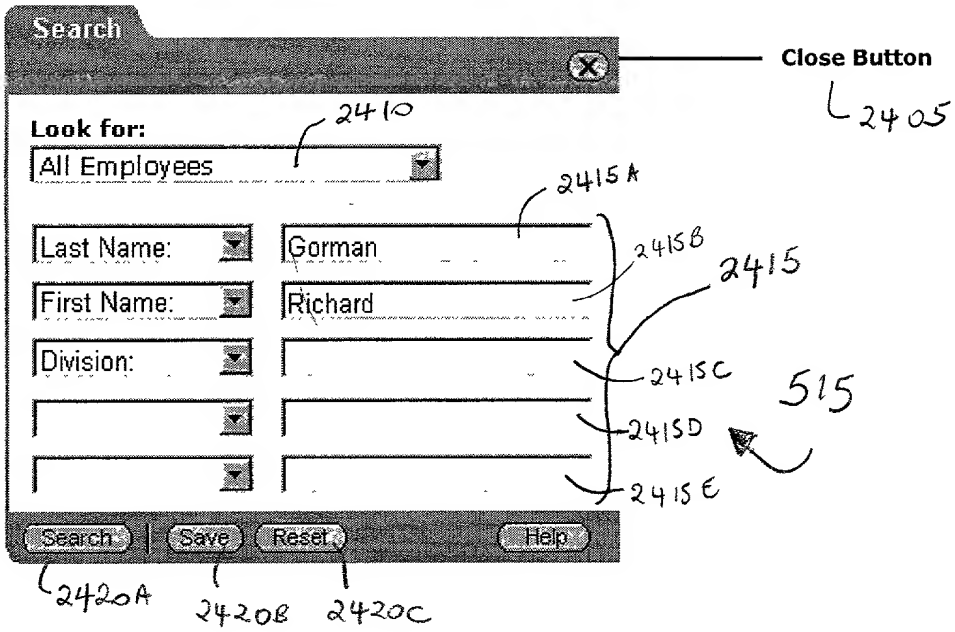

Search
Close Button
2405
Look for:
2410
All Employees
2415A
Last Name:
Gorman
2415B
2415
First Name:
Richard
Division:
2415C
515
2415D
2415E
Search
Save
Reset
Help
2420A
2420B
2420C

FIG. 24

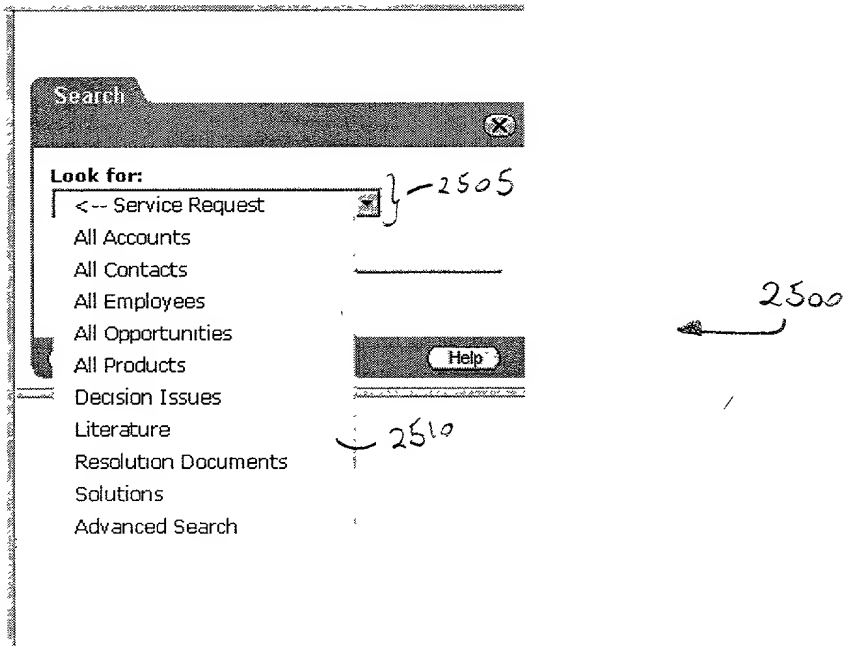
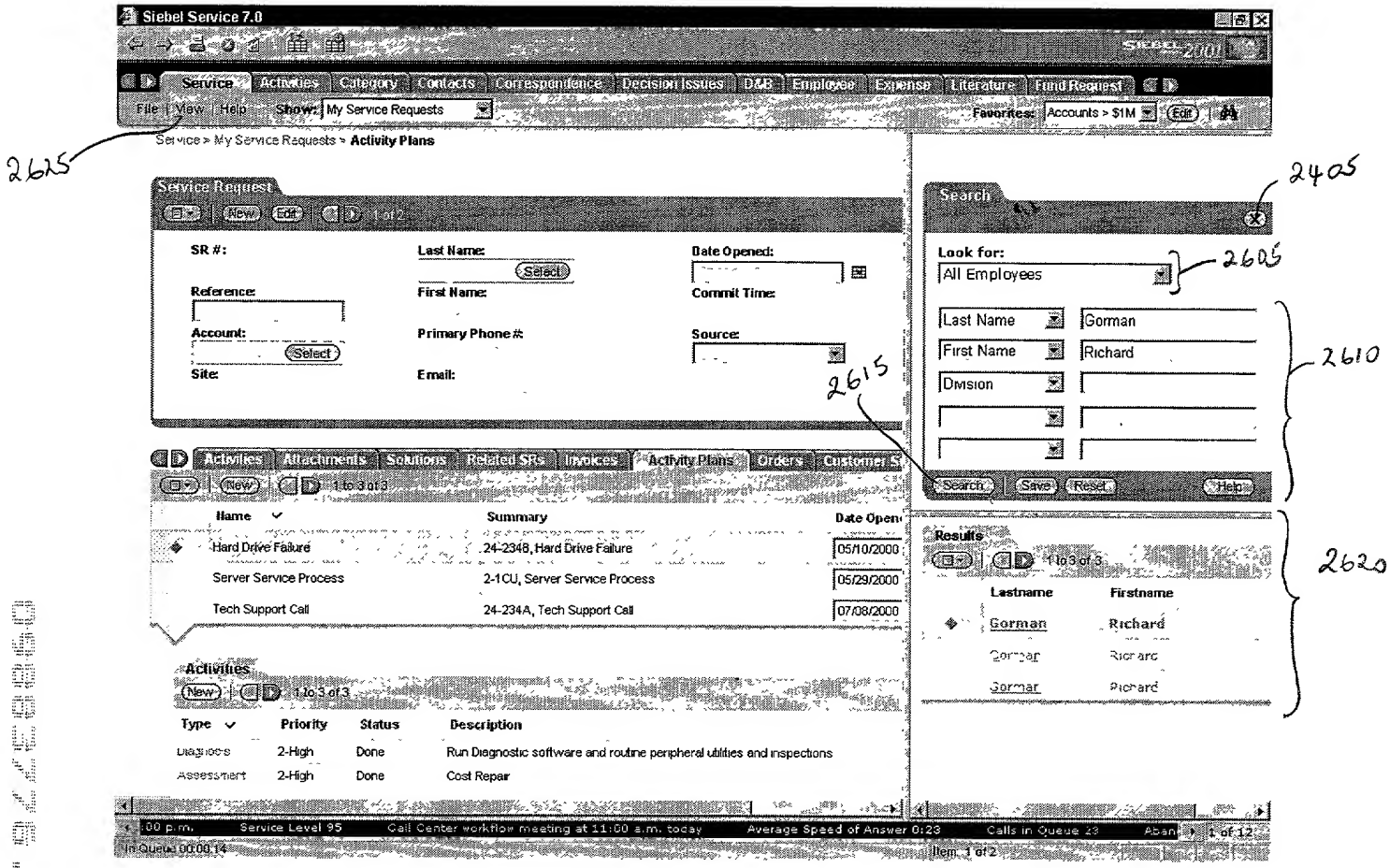

Search
Look for:
2505
<-- Service Request
All Accounts
All Contacts
All Employees
All Opportunities
All Products
Decision Issues
Literature
Resolution Documents
Solutions
Advanced Search
Help
2510
2500

FIG. 25


Siebel Service 7.0
Service
Activities
Category
Contacts
Correspondence
Decision Issues
D&B
Employee
Expense
Literature
Fund Request
File
View
Help
Show:
My Service Requests
Favorites:
Accounts > $1M
Edit
Service > My Service Requests > Activity Plans
2625
Service Request
New
Edit
SR #:
Last Name:
Select
Date Opened:
Reference:
First Name:
Commit Time:
Account:
Select
Primary Phone #:
Source:
Site:
Email:
2615
Activities
Attachments
Solutions
Related SRs
Invoices
Activity Plans
Orders
Name
Summary
Date Open
Hard Drive Failure
24-2348, Hard Drive Failure
05/10/2000
Server Service Process
2-1CU, Server Service Process
05/29/2000
Tech Support Call
24-234A, Tech Support Call
07/08/2000
Activities
New
1 to 3 of 3
Type
Priority
Status
Description
Diagnosis
2-High
Done
Run Diagnostic software and routine peripheral utilities and inspections
Assessment
2-High
Done
Cost Repair
Search
2405
Look for:
All Employees
2605
Last Name
Gorman
First Name
Richard
Division
2610
Search
Save
Reset
Help
Results
1 to 3 of 3
2620
Lastname
Firstname
Gorman
Richard
Gorman
Richard
Gorman
Richard
7:00 p.m.
Service Level 95
Call Center workflow meeting at 11:00 a.m. today
Average Speed of Answer 0:23
Calls in Queue 23
Item 1 of 2

2600

FIG. 26

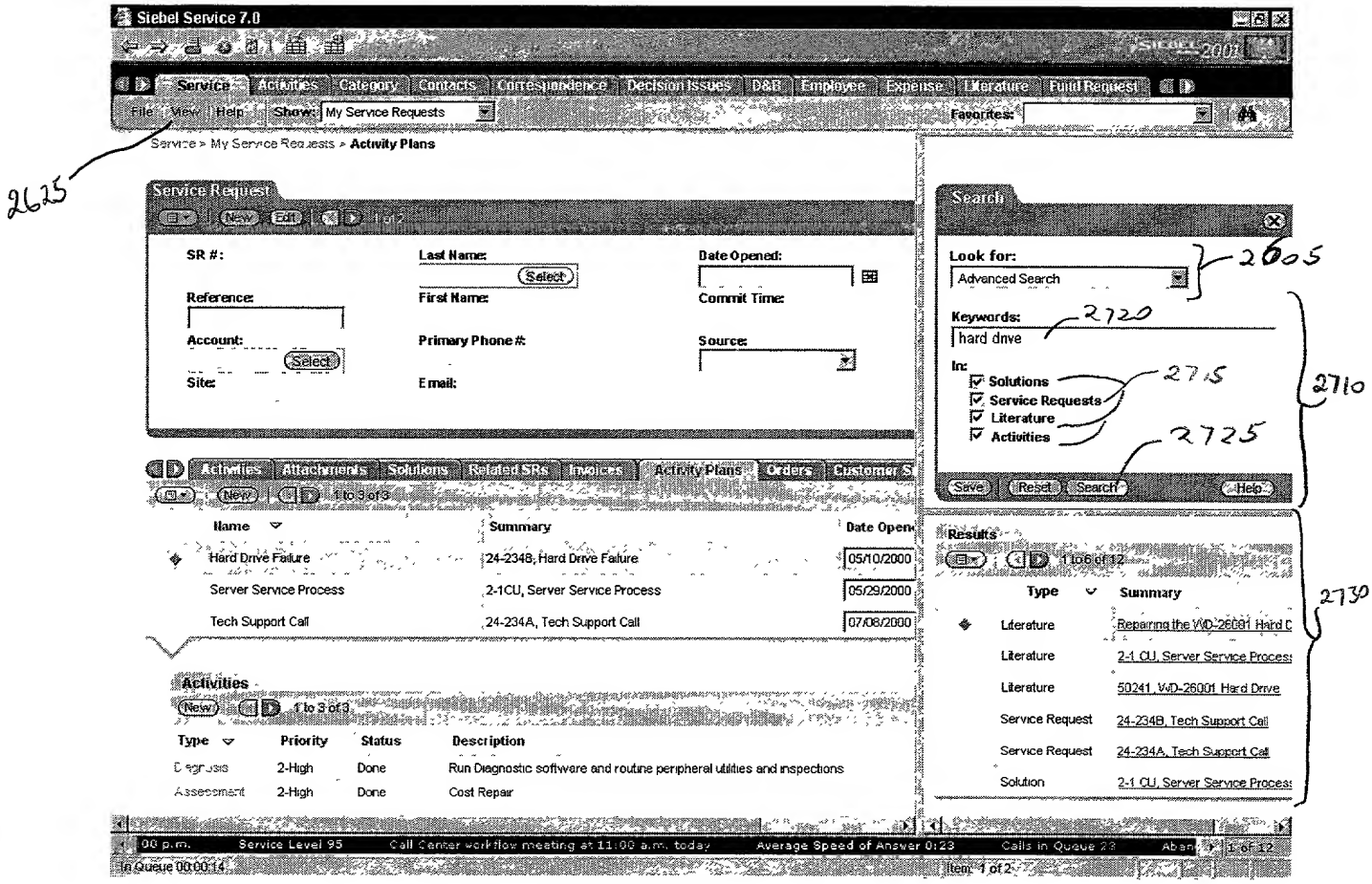

Siebel Service 7.0
Service
Activities
Category
Contacts
Correspondence
Decision Issues
D&B
Employee
Expense
Literature
Fund Request
File
View
Help
Show:
My Service Requests
Favorites:
Service > My Service Requests > Activity Plans
2625
Service Request
New
Edit
SR #:
Last Name:
Select
Date Opened:
Reference:
First Name:
Commit Time:
Account:
Select
Primary Phone #:
Source:
Site:
Email:
Activities
Attachments
Solutions
Related SRs
Invoices
Activity Plans
Orders
Customer S
New
1 to 3 of 3
Name
Summary
Date Open
Hard Drive Failure
24-2348, Hard Drive Failure
05/10/2000
Server Service Process
2-1CU, Server Service Process
05/29/2000
Tech Support Call
24-234A, Tech Support Call
07/08/2000
Activities
New
1 to 3 of 3
Type
Priority
Status
Description
Diagnosis
2-High
Done
Run Diagnostic software and routine peripheral utilities and inspections
Assessment
2-High
Done
Cost Repair
Search
Look for:
Advanced Search
2605
Keywords:
2720
hard drive
In:
Solutions
Service Requests
Literature
Activities
2715
2710
2725
Save
Reset
Search
Help
Results
1 to 6 of 12
Type
Summary
2730
Literature
Repairing the WD-26001 Hard D
Literature
2-1 CU, Server Service Process
Literature
50241, WD-26001 Hard Drive
Service Request
24-234B, Tech Support Call
Service Request
24-234A, Tech Support Call
Solution
2-1 CU, Server Service Process
08 p.m.
Service Level 95
Call Center workflow meeting at 11:00 a.m. today
Average Speed of Answer 0:23
Calls in Queue 23
Abar
1 of 12
In Queue 00:00:14
Item: 1 of 2

FIG. 27

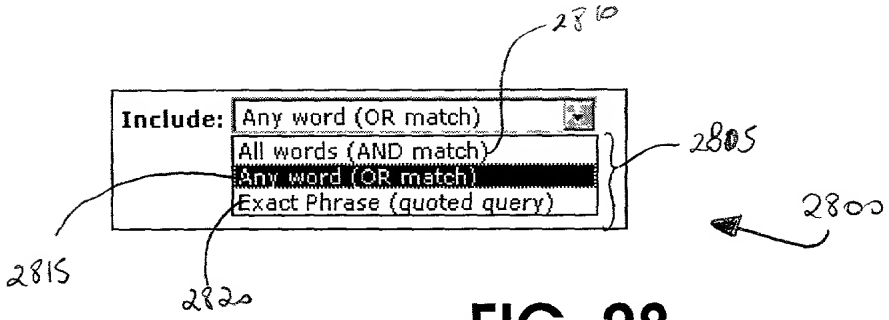

2810
Include:
Any word (OR match)
All words (AND match)
Any word (OR match)
Exact Phrase (quoted query)
2805
2800
2815
2820

FIG. 28

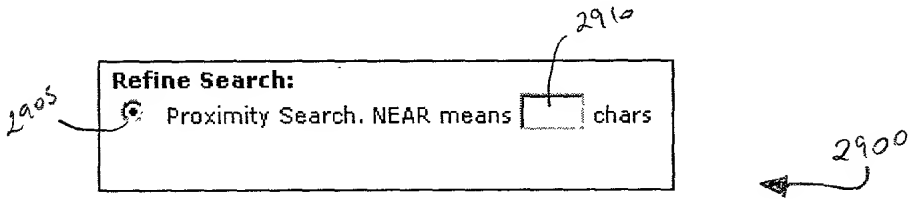

2910
Refine Search:
Proximity Search. NEAR means
chars
2905
2900

FIG. 29

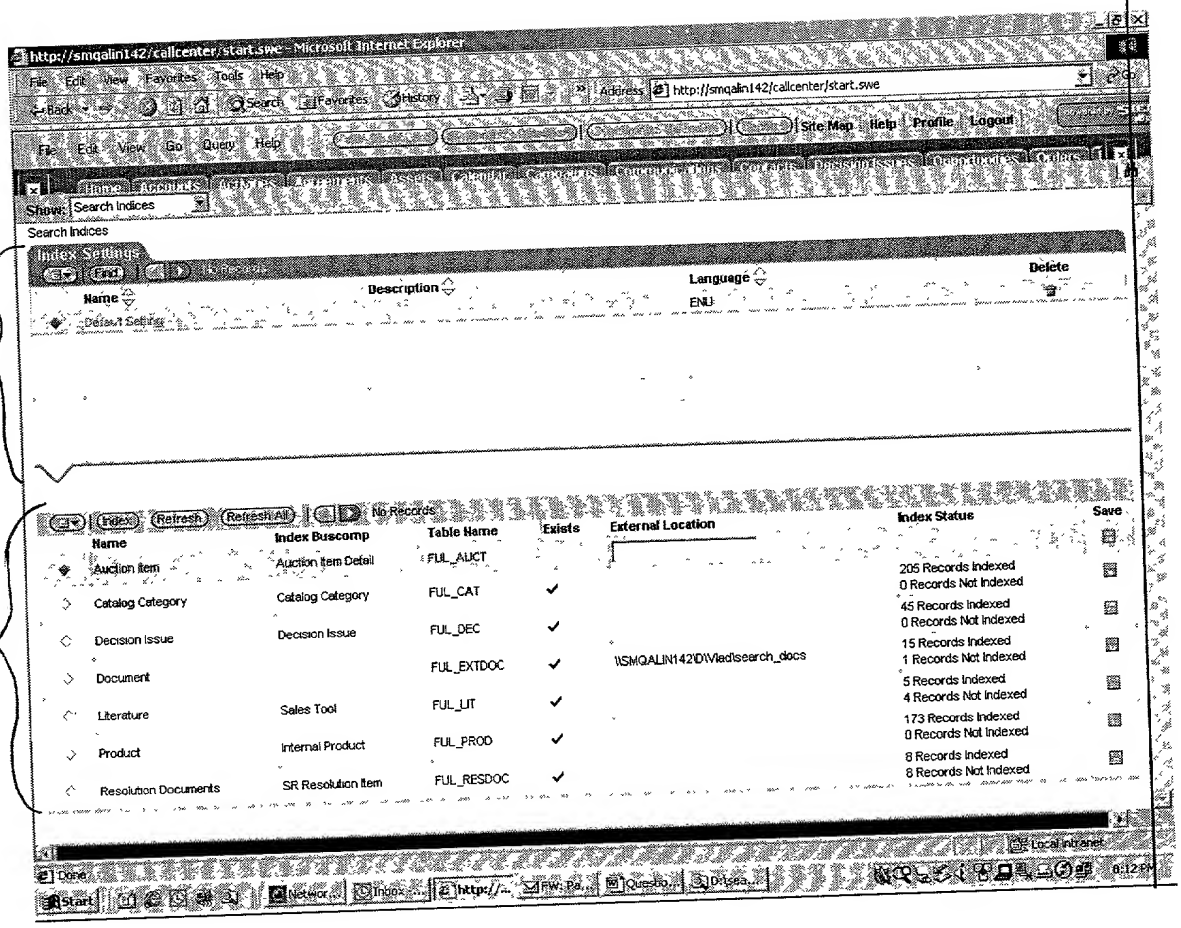

http://smqalin142/callcenter/start.swe - Microsoft Internet Explorer
Site Map
Help
Profile
Logout
Show: Search Indices
Search Indices
Index Settings
Name
Description
Language
Delete
Default Setting
ENU
3005
Index
Refresh
Refresh All
No Records
Name
Index Buscomp
Table Name
Exists
External Location
Index Status
Save
Auction Item
Auction Item Detail
FUL_AUCT
205 Records Indexed
0 Records Not Indexed
Catalog Category
Catalog Category
FUL_CAT
45 Records Indexed
0 Records Not Indexed
Decision Issue
Decision Issue
FUL_DEC
15 Records Indexed
1 Records Not Indexed
Document
FUL_EXTDOC
\\SMQALIN142\D\Vlad\search_docs
5 Records Indexed
4 Records Not Indexed
Literature
Sales Tool
FUL_LIT
173 Records Indexed
0 Records Not Indexed
Product
Internal Product
FUL_PROD
8 Records Indexed
8 Records Not Indexed
Resolution Documents
SR Resolution Item
FUL_RESDOC
3010
Done
Local intranet

FIG. 30

3000

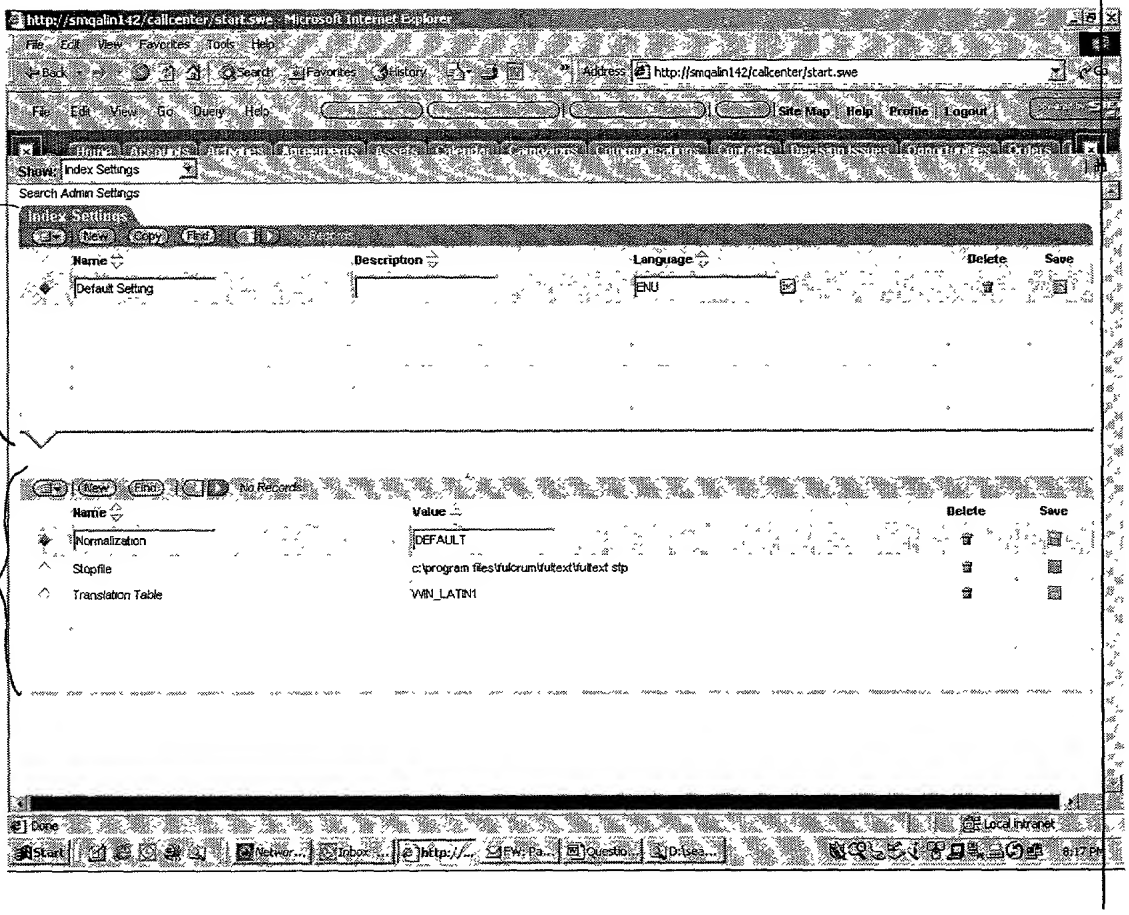

http://smqalin142/callcenter/start.swe - Microsoft Internet Explorer
Show: Index Settings
Search Admin Settings
Index Settings
New
Copy
Find
Name
Description
Language
Delete
Save
Default Setting
ENU
3105
New
Find
No Records
Name
Value
Delete
Save
Normalization
DEFAULT
Stopfile
c:\program files\fulcrum\fultext\fultext.stp
Translation Table
WIN_LATIN1
3110
Done
Local intranet
Start

FIG. 31

3100

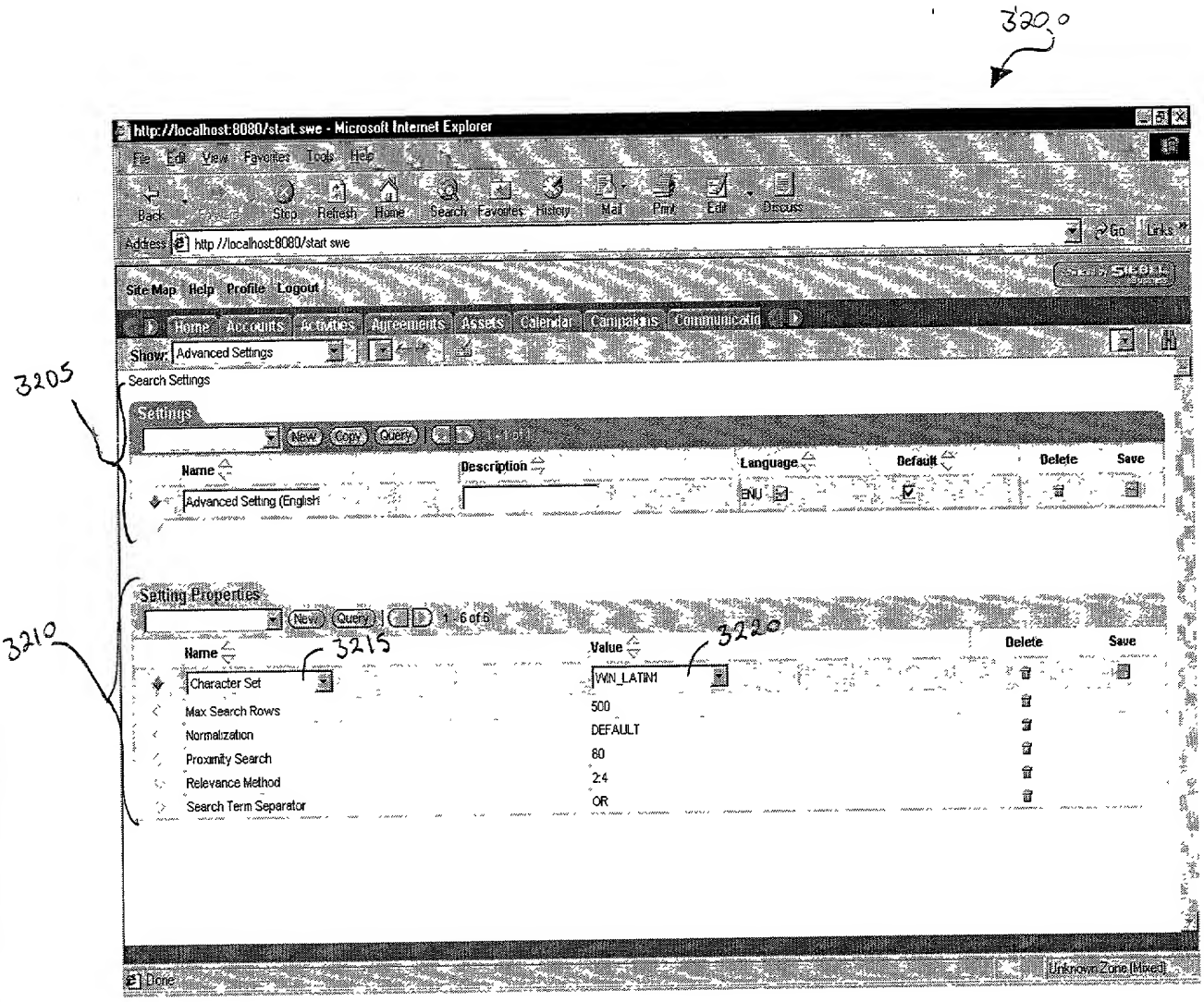

3200
http://localhost:8080/start.swe - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Stop Refresh Home Search Favorites History Mail Print Edit Discuss
Address http://localhost:8080/start.swe
Go Links
Site Map Help Profile Logout
Home Accounts Activities Agreements Assets Calendar Campaigns Communicatio
Show: Advanced Settings
Search Settings
3205
Settings
New Copy Query
Name Description Language Default Delete Save
Advanced Setting (English ENU
Setting Properties
3210
New Query 1 - 6 of 6
Name 3215 Value 3220 Delete Save
Character Set WIN_LATIN1
Max Search Rows 500
Normalization DEFAULT
Proximity Search 80
Relevance Method 2-4
Search Term Separator OR
Done
Unknown Zone (Mixed)

FIG. 32

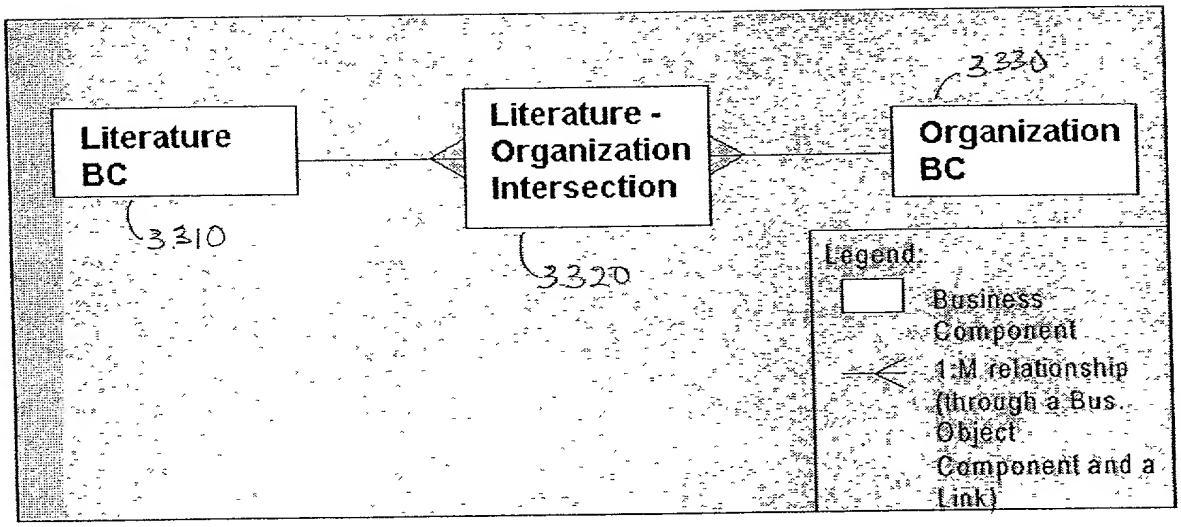

3300
Literature BC
3310
Literature - Organization Intersection
3320
Organization BC
3330
Legend:
Business Component
1:M relationship (through a Bus. Object Component and a Link)

FIG 33

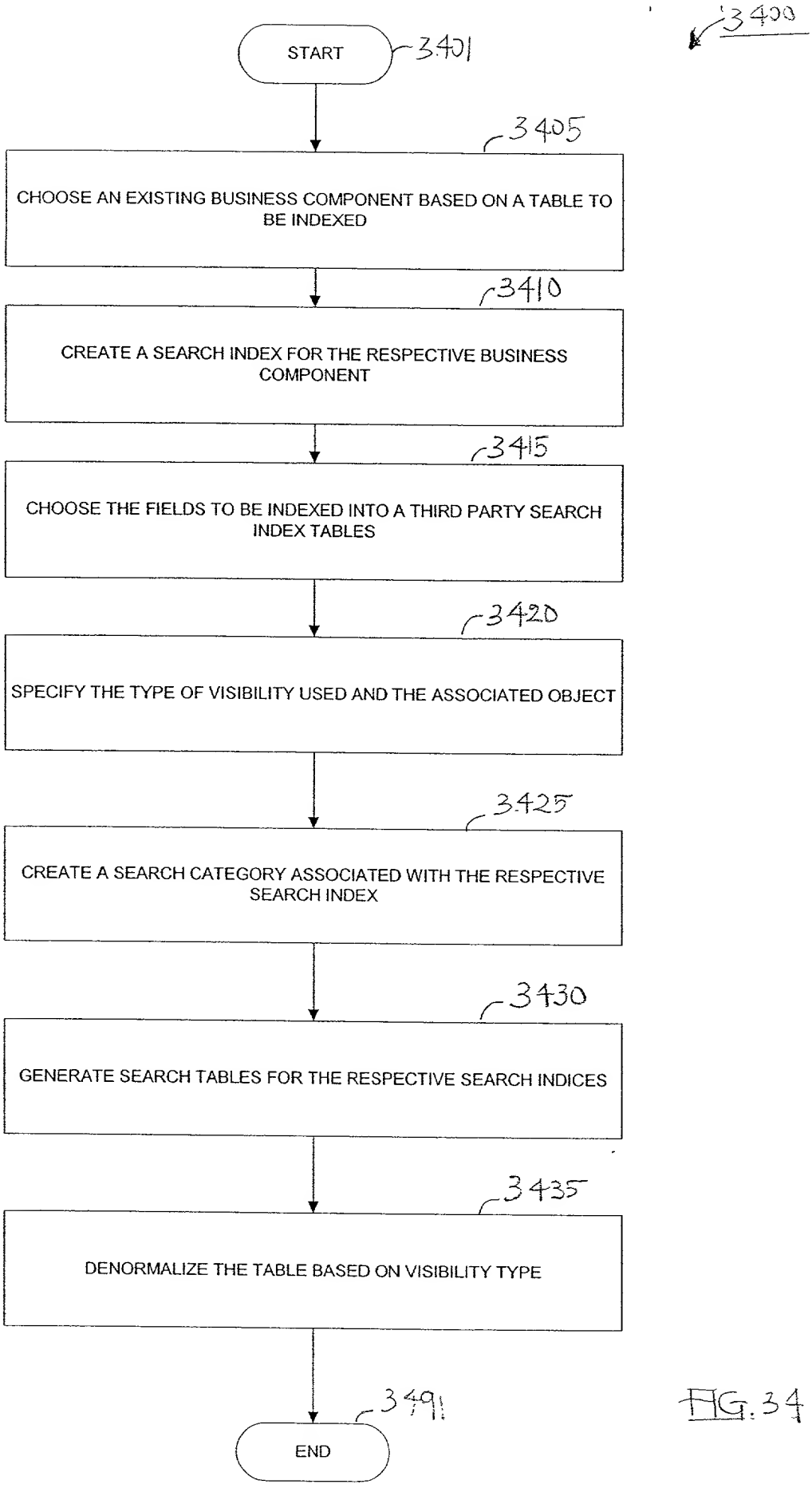

3400
START
3401
3405
CHOOSE AN EXISTING BUSINESS COMPONENT BASED ON A TABLE TO BE INDEXED
3410
CREATE A SEARCH INDEX FOR THE RESPECTIVE BUSINESS COMPONENT
3415
CHOOSE THE FIELDS TO BE INDEXED INTO A THIRD PARTY SEARCH INDEX TABLES
3420
SPECIFY THE TYPE OF VISIBILITY USED AND THE ASSOCIATED OBJECT
3425
CREATE A SEARCH CATEGORY ASSOCIATED WITH THE RESPECTIVE SEARCH INDEX
3430
GENERATE SEARCH TABLES FOR THE RESPECTIVE SEARCH INDICES
3435
DENORMALIZE THE TABLE BASED ON VISIBILITY TYPE
3491
END

FIG. 34

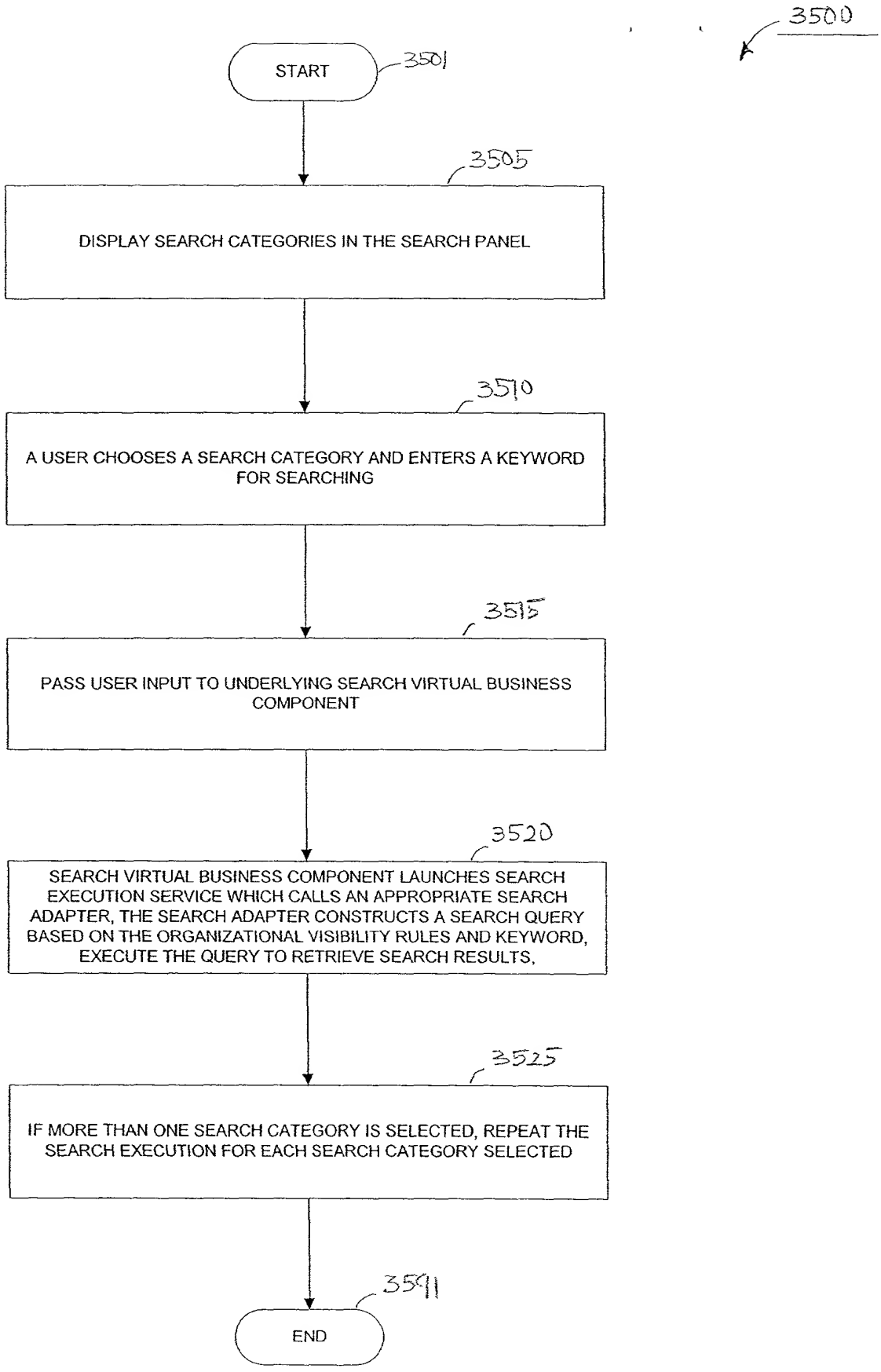

3500
START
3501
3505
DISPLAY SEARCH CATEGORIES IN THE SEARCH PANEL
3510
A USER CHOOSES A SEARCH CATEGORY AND ENTERS A KEYWORD FOR SEARCHING
3515
PASS USER INPUT TO UNDERLYING SEARCH VIRTUAL BUSINESS COMPONENT
3520
SEARCH VIRTUAL BUSINESS COMPONENT LAUNCHES SEARCH EXECUTION SERVICE WHICH CALLS AN APPROPRIATE SEARCH ADAPTER, THE SEARCH ADAPTER CONSTRUCTS A SEARCH QUERY BASED ON THE ORGANIZATIONAL VISIBILITY RULES AND KEYWORD, EXECUTE THE QUERY TO RETRIEVE SEARCH RESULTS.
3525
IF MORE THAN ONE SEARCH CATEGORY IS SELECTED, REPEAT THE SEARCH EXECUTION FOR EACH SEARCH CATEGORY SELECTED
3511
END

FIG. 35

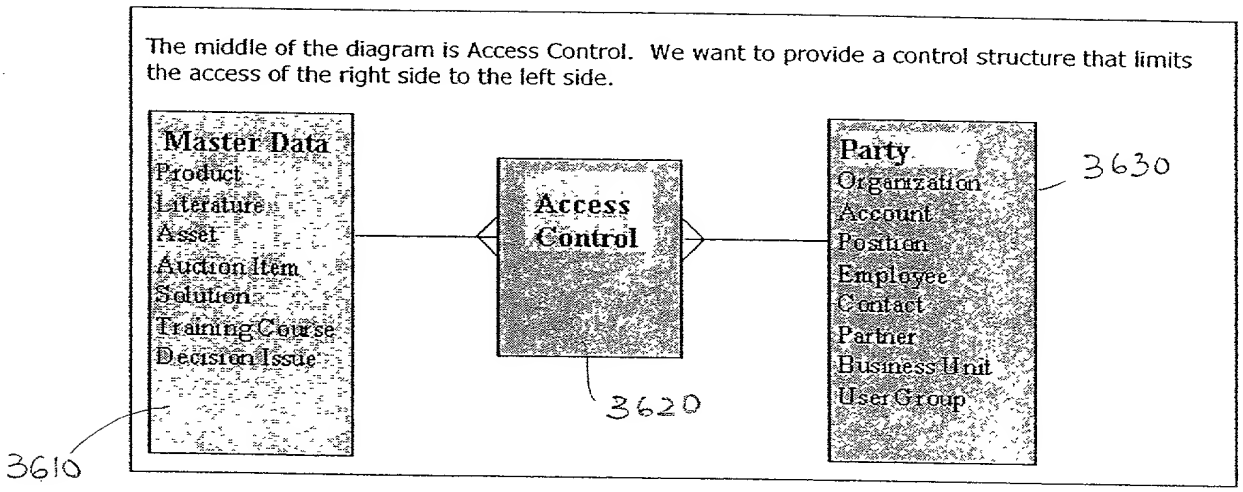

3600
The middle of the diagram is Access Control. We want to provide a control structure that limits the access of the right side to the left side.
Master Data
Product
Literature
Asset
Auction Item
Solution
Training Course
Decision Issue
3610
Access Control
3620
Party
Organization
Account
Position
Employee
Contact
Partner
Business Unit
User Group
3630

FIG. 36

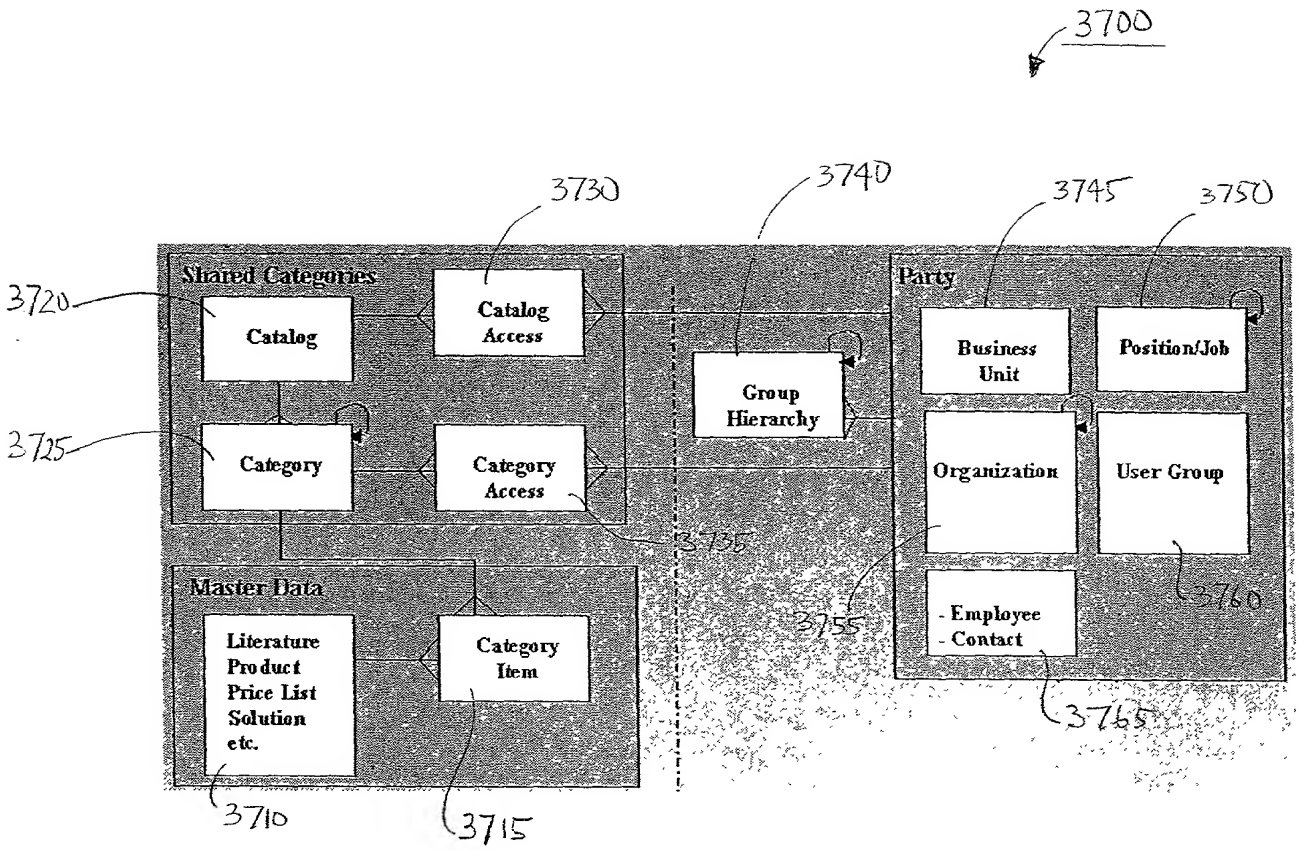

3700
3730
3740
3745
3750
Shared Categories
3720
Catalog
Catalog Access
3725
Category
Category Access
3735
Group Hierarchy
Party
Business Unit
Position/Job
Organization
User Group
3760
3755
- Employee
- Contact
3765
Master Data
Literature
Product
Price List
Solution
etc.
Category Item
3710
3715

FIG. 37

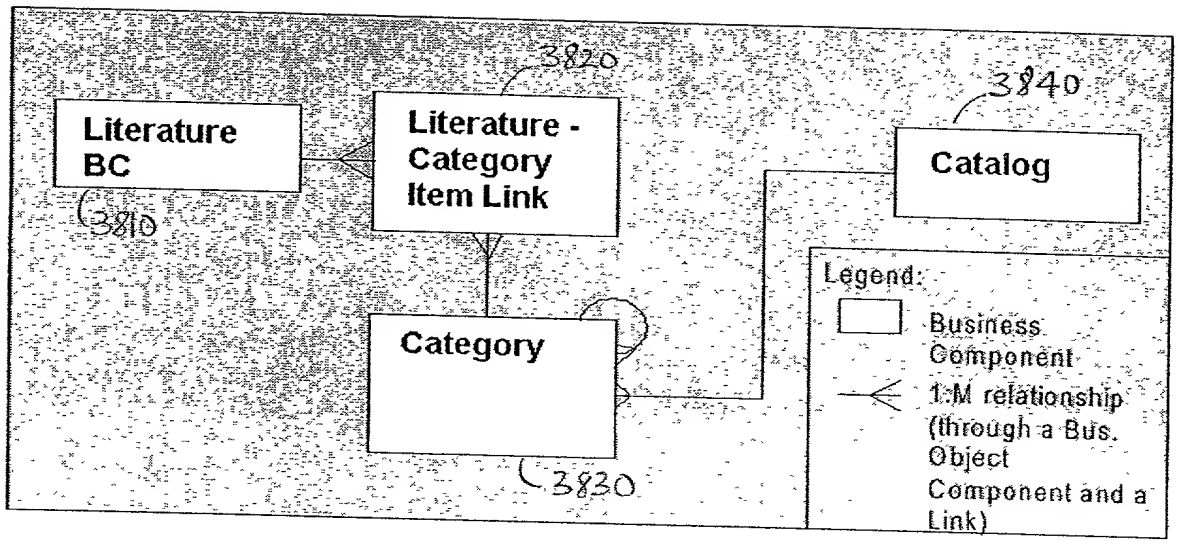

3800
3820
3840
Literature BC
3810
Literature - Category Item Link
Catalog
Category
3830
Legend:
Business Component
1:M relationship (through a Bus. Object Component and a Link)

FIG. 38

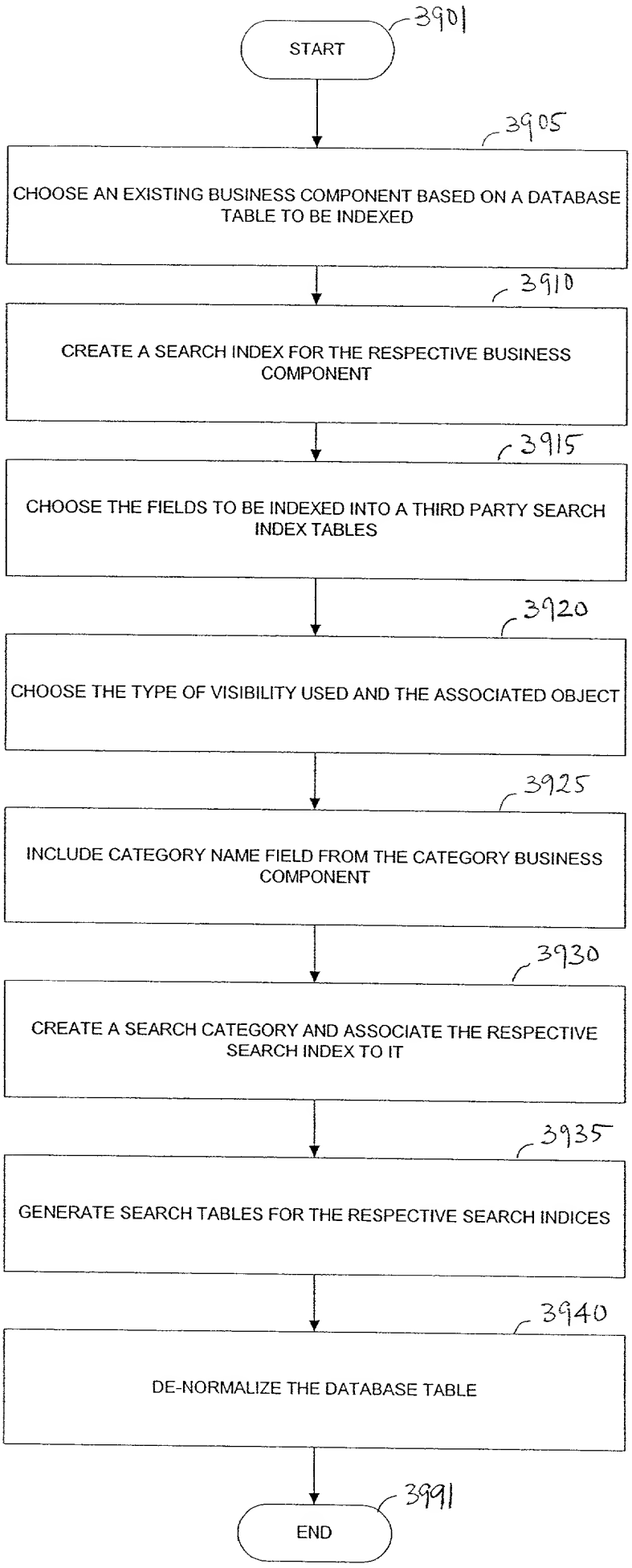

3900
3901
START
3905
CHOOSE AN EXISTING BUSINESS COMPONENT BASED ON A DATABASE TABLE TO BE INDEXED
3910
CREATE A SEARCH INDEX FOR THE RESPECTIVE BUSINESS COMPONENT
3915
CHOOSE THE FIELDS TO BE INDEXED INTO A THIRD PARTY SEARCH INDEX TABLES
3920
CHOOSE THE TYPE OF VISIBILITY USED AND THE ASSOCIATED OBJECT
3925
INCLUDE CATEGORY NAME FIELD FROM THE CATEGORY BUSINESS COMPONENT
3930
CREATE A SEARCH CATEGORY AND ASSOCIATE THE RESPECTIVE SEARCH INDEX TO IT
3935
GENERATE SEARCH TABLES FOR THE RESPECTIVE SEARCH INDICES
3940
DE-NORMALIZE THE DATABASE TABLE
3991
END

FIG. 39

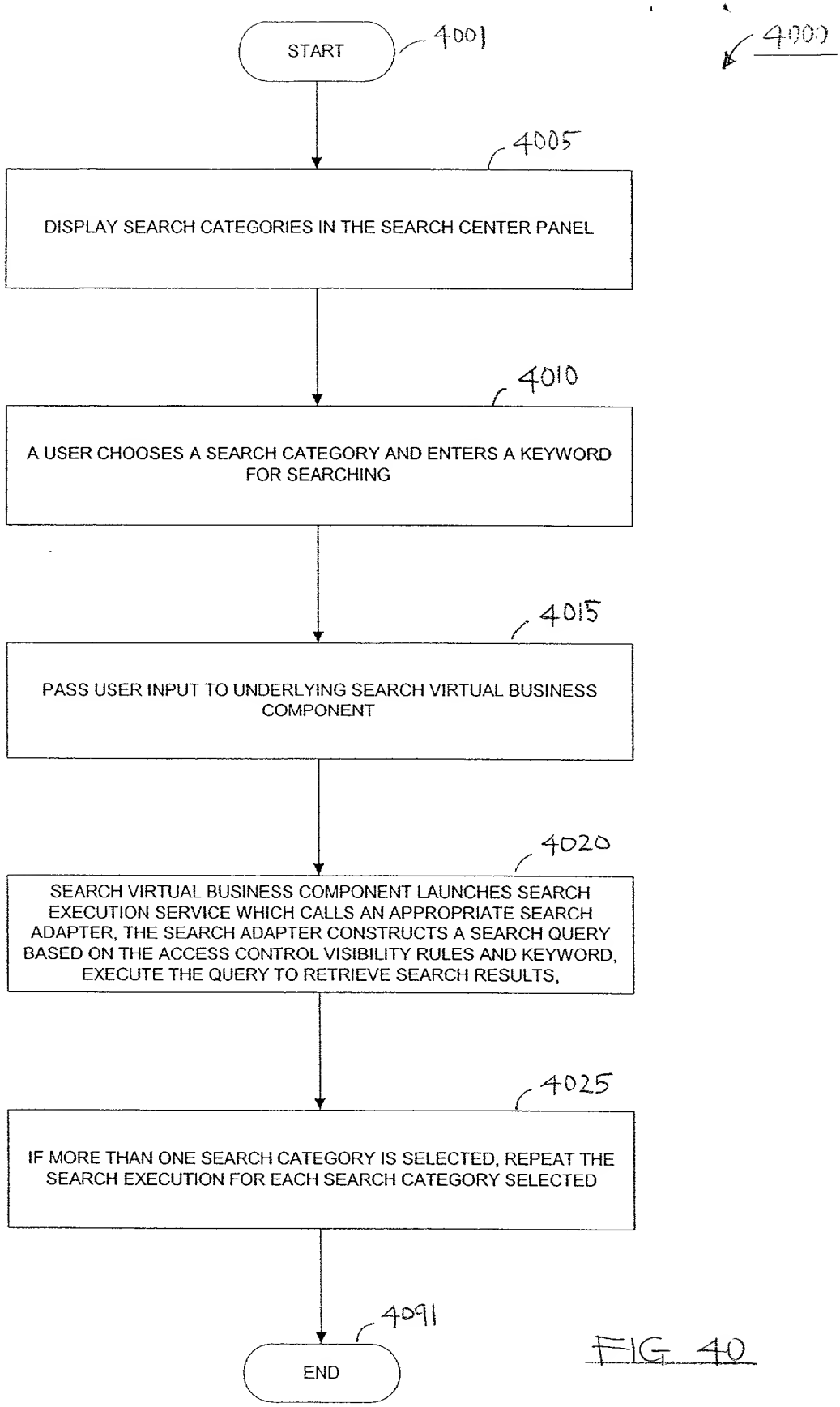

4000
START
4001
4005
DISPLAY SEARCH CATEGORIES IN THE SEARCH CENTER PANEL
4010
A USER CHOOSES A SEARCH CATEGORY AND ENTERS A KEYWORD FOR SEARCHING
4015
PASS USER INPUT TO UNDERLYING SEARCH VIRTUAL BUSINESS COMPONENT
4020
SEARCH VIRTUAL BUSINESS COMPONENT LAUNCHES SEARCH EXECUTION SERVICE WHICH CALLS AN APPROPRIATE SEARCH ADAPTER, THE SEARCH ADAPTER CONSTRUCTS A SEARCH QUERY BASED ON THE ACCESS CONTROL VISIBILITY RULES AND KEYWORD, EXECUTE THE QUERY TO RETRIEVE SEARCH RESULTS,
4025
IF MORE THAN ONE SEARCH CATEGORY IS SELECTED, REPEAT THE SEARCH EXECUTION FOR EACH SEARCH CATEGORY SELECTED
4091
END

FIG 40

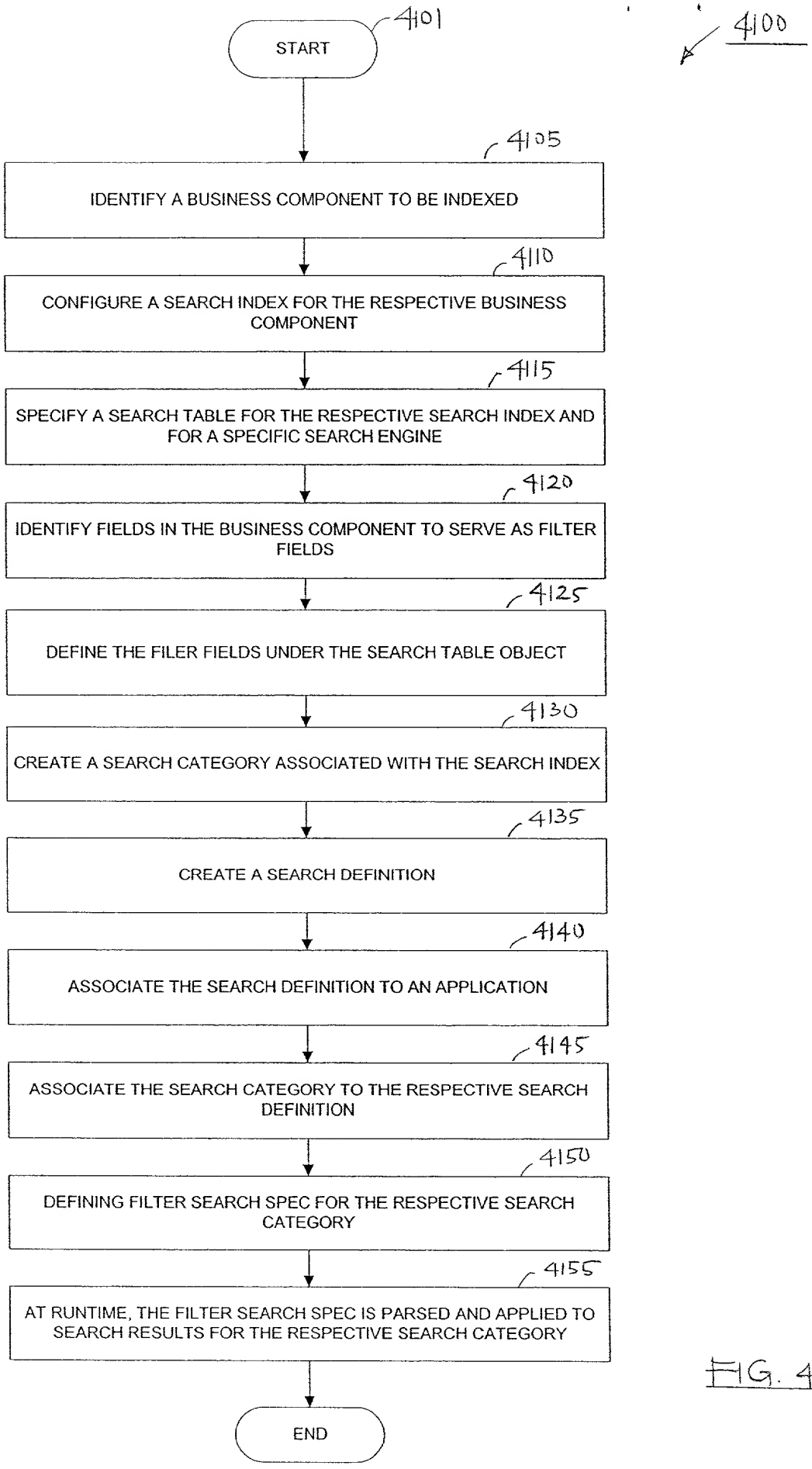

4100
START
4101
IDENTIFY A BUSINESS COMPONENT TO BE INDEXED
4105
CONFIGURE A SEARCH INDEX FOR THE RESPECTIVE BUSINESS COMPONENT
4110
SPECIFY A SEARCH TABLE FOR THE RESPECTIVE SEARCH INDEX AND FOR A SPECIFIC SEARCH ENGINE
4115
IDENTIFY FIELDS IN THE BUSINESS COMPONENT TO SERVE AS FILTER FIELDS
4120
DEFINE THE FILER FIELDS UNDER THE SEARCH TABLE OBJECT
4125
CREATE A SEARCH CATEGORY ASSOCIATED WITH THE SEARCH INDEX
4130
CREATE A SEARCH DEFINITION
4135
ASSOCIATE THE SEARCH DEFINITION TO AN APPLICATION
4140
ASSOCIATE THE SEARCH CATEGORY TO THE RESPECTIVE SEARCH DEFINITION
4145
DEFINING FILTER SEARCH SPEC FOR THE RESPECTIVE SEARCH CATEGORY
4150
AT RUNTIME, THE FILTER SEARCH SPEC IS PARSED AND APPLIED TO SEARCH RESULTS FOR THE RESPECTIVE SEARCH CATEGORY
4155
END

FIG. 41

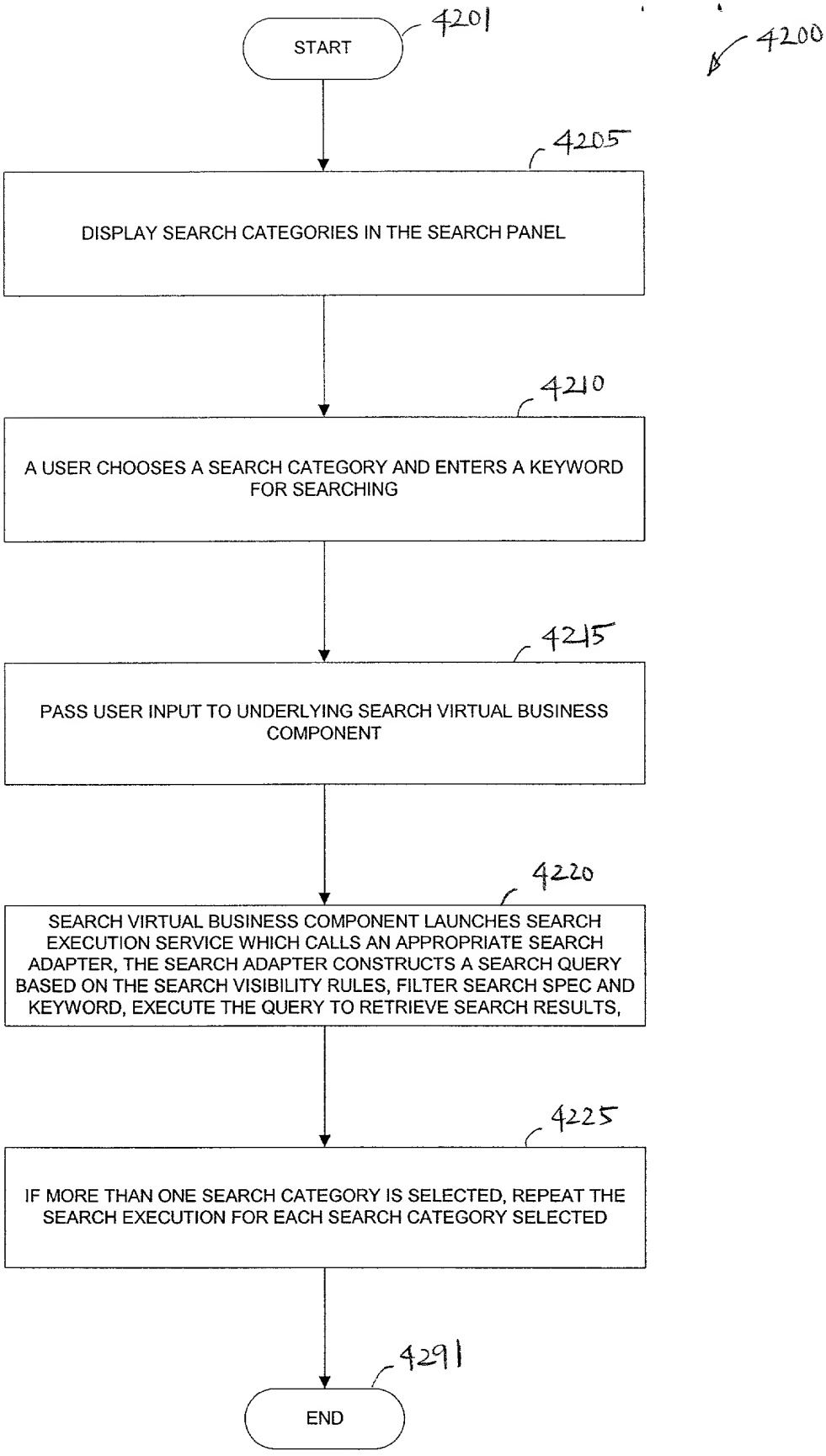

4200
START
4201
4205
DISPLAY SEARCH CATEGORIES IN THE SEARCH PANEL
4210
A USER CHOOSES A SEARCH CATEGORY AND ENTERS A KEYWORD FOR SEARCHING
4215
PASS USER INPUT TO UNDERLYING SEARCH VIRTUAL BUSINESS COMPONENT
4220
SEARCH VIRTUAL BUSINESS COMPONENT LAUNCHES SEARCH EXECUTION SERVICE WHICH CALLS AN APPROPRIATE SEARCH ADAPTER, THE SEARCH ADAPTER CONSTRUCTS A SEARCH QUERY BASED ON THE SEARCH VISIBILITY RULES, FILTER SEARCH SPEC AND KEYWORD, EXECUTE THE QUERY TO RETRIEVE SEARCH RESULTS,
4225
IF MORE THAN ONE SEARCH CATEGORY IS SELECTED, REPEAT THE SEARCH EXECUTION FOR EACH SEARCH CATEGORY SELECTED
4291
END

FIG. 42

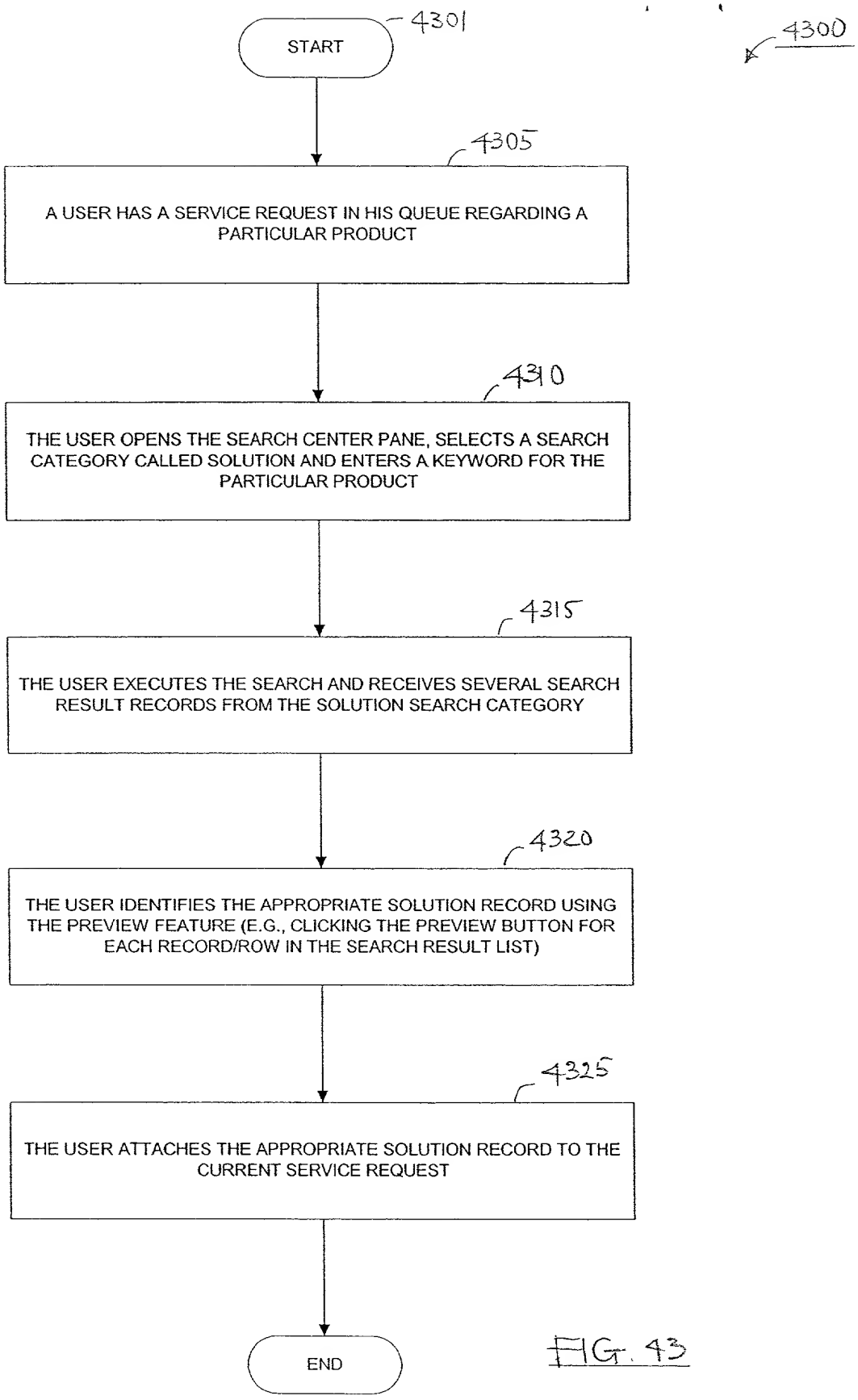

4300
START
4301
4305
A USER HAS A SERVICE REQUEST IN HIS QUEUE REGARDING A PARTICULAR PRODUCT
4310
THE USER OPENS THE SEARCH CENTER PANE, SELECTS A SEARCH CATEGORY CALLED SOLUTION AND ENTERS A KEYWORD FOR THE PARTICULAR PRODUCT
4315
THE USER EXECUTES THE SEARCH AND RECEIVES SEVERAL SEARCH RESULT RECORDS FROM THE SOLUTION SEARCH CATEGORY
4320
THE USER IDENTIFIES THE APPROPRIATE SOLUTION RECORD USING THE PREVIEW FEATURE (E.G., CLICKING THE PREVIEW BUTTON FOR EACH RECORD/ROW IN THE SEARCH RESULT LIST)
4325
THE USER ATTACHES THE APPROPRIATE SOLUTION RECORD TO THE CURRENT SERVICE REQUEST
END

FIG. 43

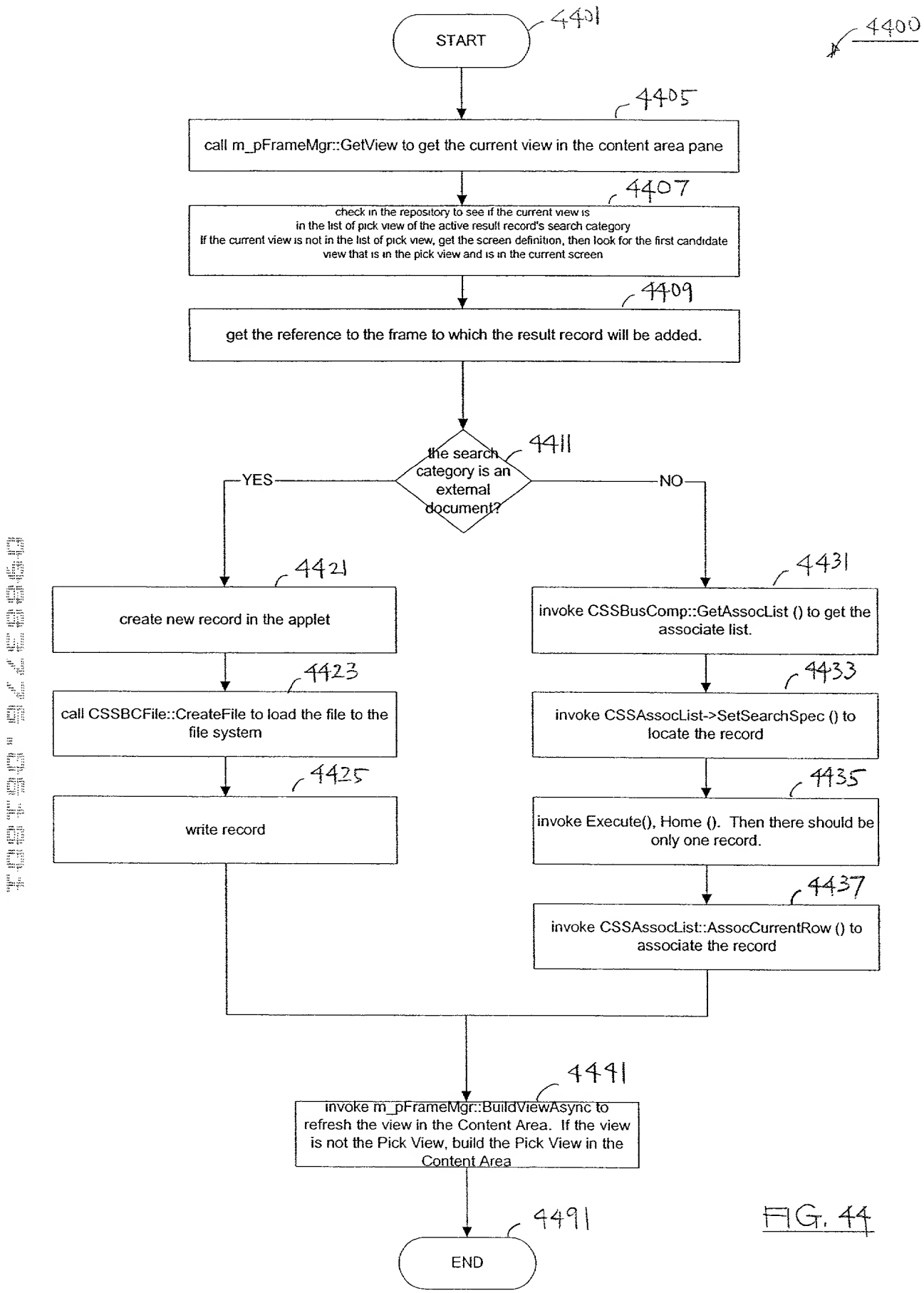

4400
START
4401
4405
call m_pFrameMgr::GetView to get the current view in the content area pane
4407
check in the repository to see if the current view is
in the list of pick view of the active result record's search category
If the current view is not in the list of pick view, get the screen definition, then look for the first candidate
view that is in the pick view and is in the current screen
4409
get the reference to the frame to which the result record will be added.
4411
the search category is an external document?
YES
NO
4421
create new record in the applet
4423
call CSSBCFile::CreateFile to load the file to the file system
4425
write record
4431
invoke CSSBusComp::GetAssocList () to get the associate list.
4433
invoke CSSAssocList->SetSearchSpec () to locate the record
4435
invoke Execute(), Home (). Then there should be only one record.
4437
invoke CSSAssocList::AssocCurrentRow () to associate the record
4441
invoke m_pFrameMgr::BuildViewAsync to refresh the view in the Content Area. If the view is not the Pick View, build the Pick View in the Content Area
4491
END

FIG. 44

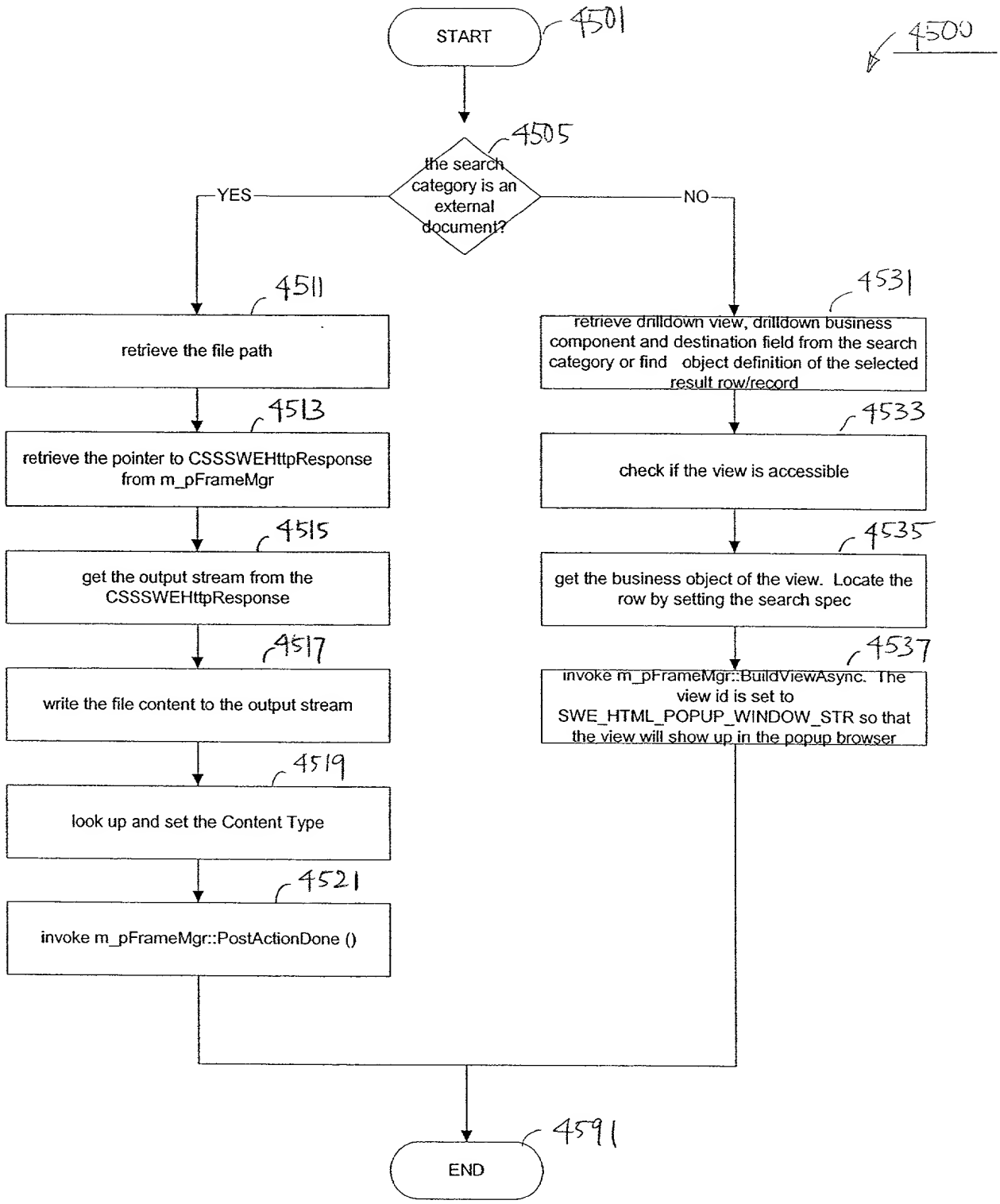

START
4501
4500
4505
the search category is an external document?
YES
NO
4511
retrieve the file path
4513
retrieve the pointer to CSSSWEHttpResponse from m_pFrameMgr
4515
get the output stream from the CSSSWEHttpResponse
4517
write the file content to the output stream
4519
look up and set the Content Type
4521
invoke m_pFrameMgr::PostActionDone ()
4531
retrieve drilldown view, drilldown business component and destination field from the search category or find object definition of the selected result row/record
4533
check if the view is accessible
4535
get the business object of the view. Locate the row by setting the search spec
4537
invoke m_pFrameMgr::BuildViewAsync. The view id is set to SWE_HTML_POPUP_WINDOW_STR so that the view will show up in the popup browser
4591
END

FIG. 45

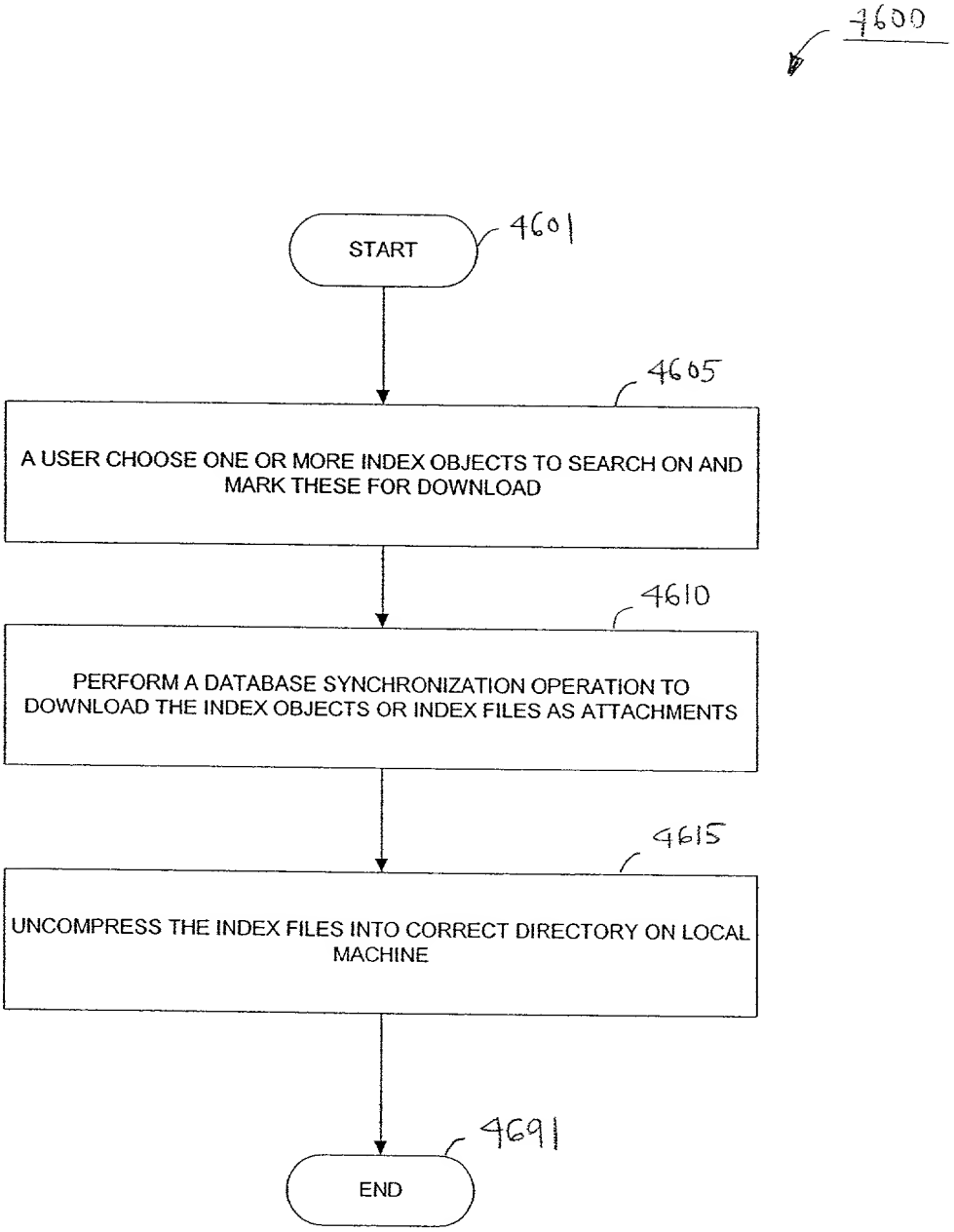

4600
START
4601
4605
A USER CHOOSE ONE OR MORE INDEX OBJECTS TO SEARCH ON AND MARK THESE FOR DOWNLOAD
4610
PERFORM A DATABASE SYNCHRONIZATION OPERATION TO DOWNLOAD THE INDEX OBJECTS OR INDEX FILES AS ATTACHMENTS
4615
UNCOMPRESS THE INDEX FILES INTO CORRECT DIRECTORY ON LOCAL MACHINE
4691
END

FIG. 46

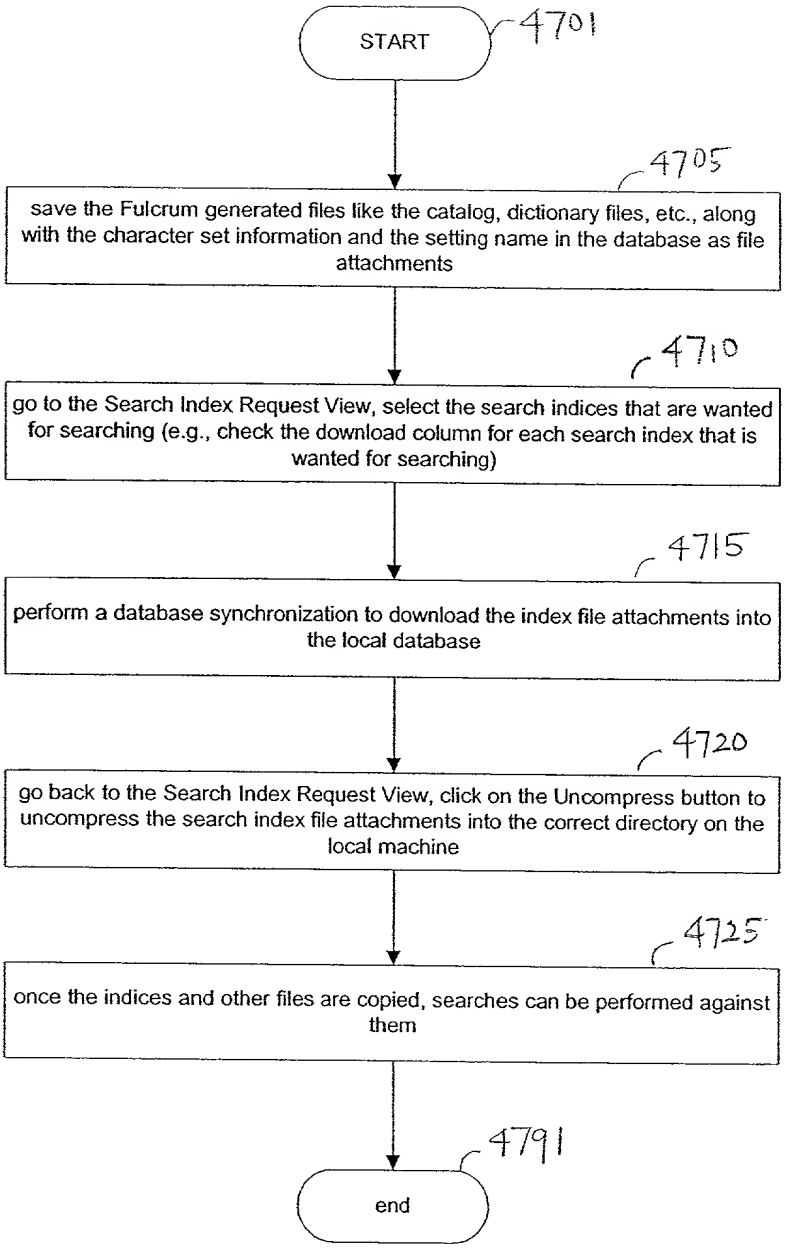

START
4701
4700
4705
save the Fulcrum generated files like the catalog, dictionary files, etc., along with the character set information and the setting name in the database as file attachments
4710
go to the Search Index Request View, select the search indices that are wanted for searching (e.g., check the download column for each search index that is wanted for searching)
4715
perform a database synchronization to download the index file attachments into the local database
4720
go back to the Search Index Request View, click on the Uncompress button to uncompress the search index file attachments into the correct directory on the local machine
4725
once the indices and other files are copied, searches can be performed against them
4791
end

FIG. 47

4800

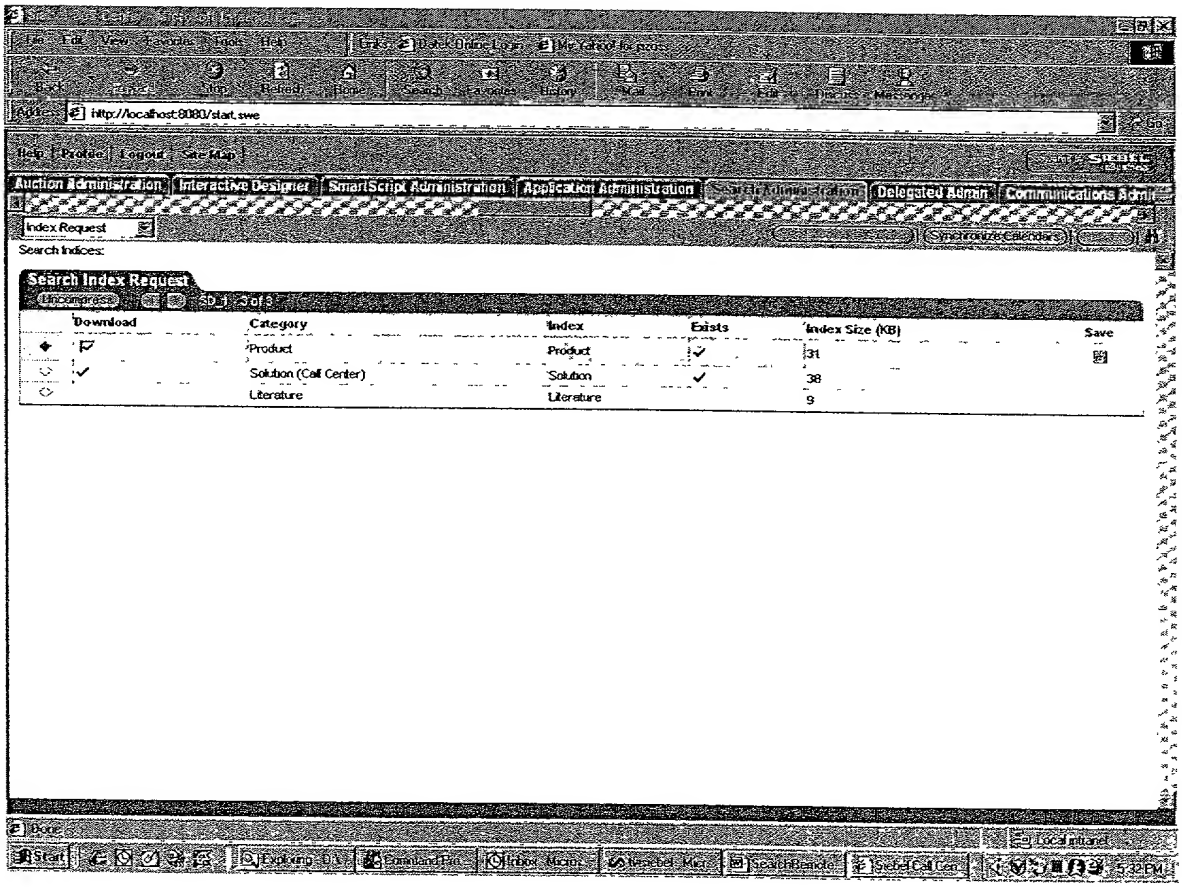

http://localhost:8080/start.swe
Auction Administration
Interactive Designer
SmartScript Administration
Application Administration
Delegated Admin
Communications Admin
Index Request
Search Indices:
Search Index Request
Download
Category
Index
Exists
Index Size (KB)
Save
Product
Product
31
Solution (Call Center)
Solution
38
Literature
Literature
9

FIG 48

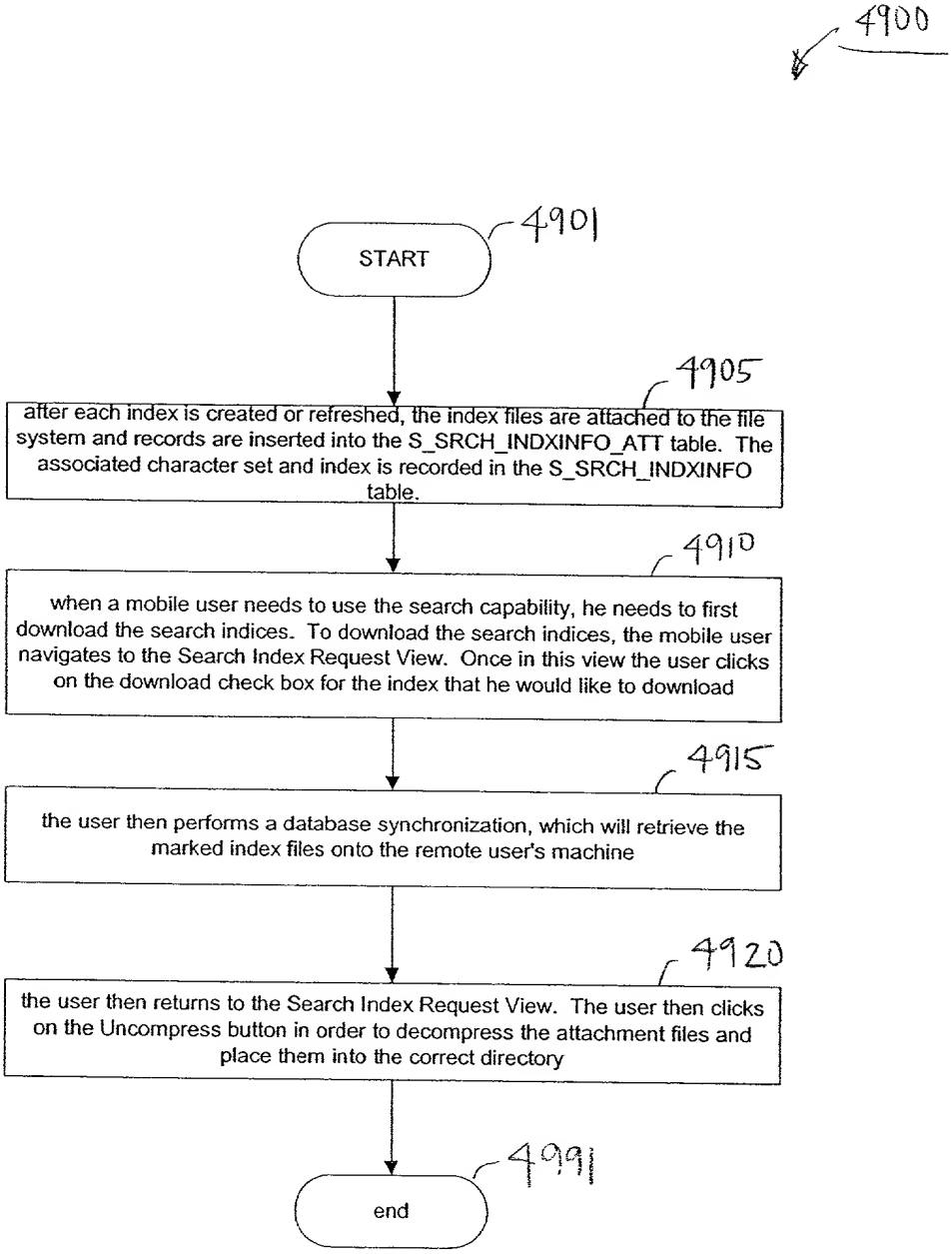

4900
START
4901
4905
after each index is created or refreshed, the index files are attached to the file system and records are inserted into the S_SRCH_INDXINFO_ATT table. The associated character set and index is recorded in the S_SRCH_INDXINFO table.
4910
when a mobile user needs to use the search capability, he needs to first download the search indices. To download the search indices, the mobile user navigates to the Search Index Request View. Once in this view the user clicks on the download check box for the index that he would like to download
4915
the user then performs a database synchronization, which will retrieve the marked index files onto the remote user's machine
4920
the user then returns to the Search Index Request View. The user then clicks on the Uncompress button in order to decompress the attachment files and place them into the correct directory
4991
end

FIG. 49